

Abnormal Uterine Bleeding

NORMAL MENSTRUAL PERIOD

The average interval between menstrual cycles is 28 days, but it can range from 21 to 35 days. The normal duration of bleeding is 3 to 5 days. The amount should be less than 80 ml (less than 1 pad or tampon per 3-hour period).

Abnormal uterine bleeding (AUB) includes menstrual bleeding that is abnormally heavy or occurs outside the normal cyclic menstruation (abnormal in timing).

- The term dysfunctional uterine bleeding was earlier used for bleeding caused by non-structural entities such as coagulopathy, endometrial dysfunction, and ovulatory disorders (Fig. 1.1).
- **Heavy menstrual bleeding (HMB)** should replace menorrhagia to describe excessive cyclical menstrual bleeding of more than 80 ml per period. Bleeding can be excessive for the normal duration (soaking a pad or tampon more than once in two hours) or last longer than 5 days.
- **Intermenstrual bleeding** occurs between clearly defined cyclic menstruations and should replace the term metorrhagia.
- **Irregular bleeding** is menstruation which occurs at intervals of less than 21 days and more than 35 days. This includes intermenstrual bleeding, oligomenorrhoea, prolonged bleeding that can last weeks or months, and other irregular patterns.
- If the bleeding is consistently **postcoital**, this suggests cervical pathology, including cervical neoplasia. However, postcoital bleeding may occur with contact during intercourse of any site along the lower genital tract that is friable (e.g. due to cervicitis or vulvovaginal atrophy) or has a lesion (e.g. cervical polyp or vulvar ulcer.)
- **Frequent menstrual bleeding** is occurrence of more than 4 episodes of bleeding during a period of 90 days.
- **Infrequent menstruation** is occurrence of 1–2 episodes of bleeding in 90 days.
- **Amenorrhoea** is the absence of menstruation for 90 days. (This is different from secondary amenorrhoea which is a pathological entity.)
- **Chronic AUB** is defined as bleeding from the uterine corpus that is abnormal in volume, regularity, or timing and has been present for most of the prior 6 months.
- **Acute AUB** is defined as an episode of heavy bleeding requiring immediate intervention.

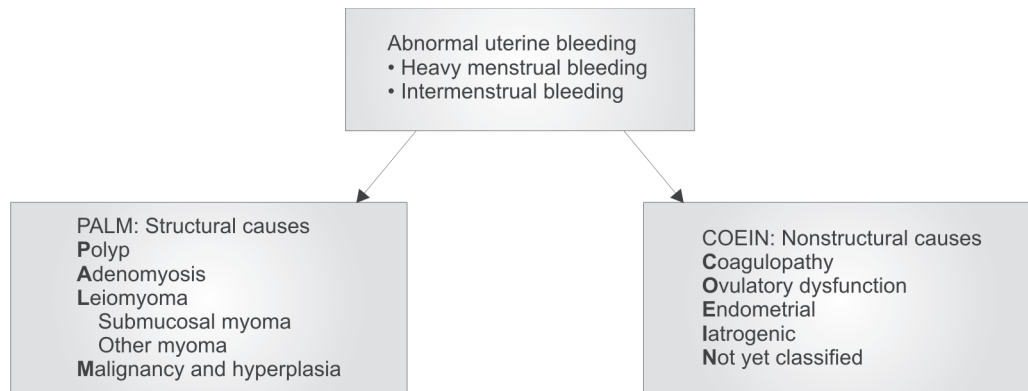


Fig. 1.1: Causes of abnormal uterine bleeding

The classification system does not include abnormal bleeding related to pathological conditions of the lower reproductive tract.

- Age is an important factor because the aetiology differs in different age groups.
- In the adolescent age group (under 20 years) structural defects are unlikely to be present and non-structural causes in the COEIN group should be considered. The commonest causative factor is ovulatory dysfunction.
- In the perimenopausal age group (over 40 years) any of the above causes can occur, but ovulatory dysfunction is common and malignancy should be excluded.
- Heavy menstrual bleeding is caused by fibroids, adenomyosis, bleeding disorders, endometrial polyps, endometrial hyperplasia, arteriovenous malformations in the uterus, local disorders of haemostasis in the uterus and copper containing intrauterine devices.
- Irregular menstrual bleeding is caused by endometrial polyps, endometrial hyperplasia, malignancy, pelvic inflammatory disease, ovulatory dysfunction (usually with longer intervals), use of gonadal steroids and cervical and lower genital tract lesions. The latter 2 also cause postcoital bleeding.

THE PALM GROUP

Polyps

- Include endometrial or endocervical polyps.
- May be symptomless or may cause heavy menstrual bleeding (endometrial polyps), irregular bleeding, postcoital bleeding or vaginal discharge.
- Diagnosed by transvaginal ultrasound scanning and will be seen as an area of focal thickening of the endometrium.
- Diagnosis is confirmed by hysteroscopy and resection can be carried out at the same time.

Adenomyosis

- Causes heavy menstrual bleeding with dysmenorrhoea and dyspareunia.
- Diagnosed by bimanual examination and transvaginal ultrasound scanning.
- On examination the uterus is tender and uniformly enlarged.
- Ultrasound scanning will show uniform hypertrophy of the myometrium with diffuse myometrial lesions.

Leiomyoma

- Generally mainly submucosal tumours cause heavy menstrual loss. Intramural fibroids also can cause HMB due to distortion and altered contractility of the myometrium. It



can also cause increased vascularity of the myometrium extending to the submucosal layer.

Malignancy or Endometrial Hyperplasia

- These conditions cause irregular bleeding. Endometrial hyperplasia can cause HMB.
- Phenothiazine, tricyclic anti-depressants, anti-psychotic drugs such as risperidone, can cause reduced inhibition of prolactin release, resulting in amenorrhoea and irregular bleeding.
- Phenytoin, corticosteroids and tamoxifen also can cause abnormal uterine bleeding.

THE COIN GROUP

Coagulopathy

- Can be due to blood disorders such as von Willebrand disease or anti-coagulant treatment.
- Causes HMB or irregular bleeding.

Ovulatory Dysfunction

- Can cause amenorrhoea, scanty bleeding, unpredictable and irregular bleeding or heavy menstrual bleeding.
- The cause of dysfunction may be ill-defined or may be due to PCOS, hyperprolactinaemia, hypothyroidism, mental stress, obesity, weight loss, anorexia or excessive exercise.
- More common at extremes of reproductive age such as adolescence and the perimenopausal period.

Endometrial Disorder

- A diagnosis is reached after excluding other causes.
- The disorder may occur due to local production of vasodilators, reduced production of vasoconstrictors and increased production of lytic substances.

Iatrogenic Causes

- Amenorrhoea, breakthrough bleeding and irregular bleeding can be caused by combined oral contraceptives, injectable progestogen preparations, progestogen implants and levonorgestrel containing intrauterine devices. Copper containing intrauterine devices can cause excessive and/or irregular bleeding.

INVESTIGATION OF A PATIENT WITH ABNORMAL UTERINE BLEEDING

- Exclude pregnancy.
- Exclude post-menopausal bleeding.
- Confirm the chronic nature.
- Exclude structural causes.
- Consider non-structural causes.

History

- Age is an important factor because the aetiology differs in different age groups.
- Exclude pregnancy by history of a period of amenorrhoea, symptoms of pregnancy and a positive urine or serum beta hCG test.
- Consider postmenopausal bleeding, if there is a period of amenorrhoea of more than 1 year in a woman older than 45 years.
- Exclude iatrogenic causes.
- Assess the amount of bleeding. Heavy menstruation is considered as soaking a pad or tampon more than every two hours or as a volume of bleeding that interferes with daily activities (e.g. wakes patient from sleep, stains clothing or sheets).
- Consider the pattern of bleeding. Leiomyoma and adenomyosis will cause excessive menstrual bleeding while adenomyosis will cause dysmenorrhoea as well. Endocervical and endometrial polyps and endometrial carcinoma will cause irregular bleeding with intermittent discharge though endometrial polyps can also cause HMB. Ovulatory dysfunction will cause irregular bleeding after a prolonged interval. Irregular use of hormonal contraceptives will cause totally irregular and unpredictable bleeding.



- Postcoital bleeding is caused by cervical and lower genital tract lesions.
- Consider accompanying symptoms such as dysmenorrhoea which may be present in endometriosis, adenomyosis and pelvic inflammatory disease.
- Exclude symptoms suggestive of systemic causes of bleeding such as hypothyroidism, hyperprolactinaemia, coagulation disorders, liver disease, adrenal or hypothalamic disorders.
- Exclude symptoms of PCOS such as obesity, hirsutism and infertility.
- Exclude a family history or personal history of a coagulation disorder.
- Symptoms of anaemia may be present.
- History of previous investigations and previous treatment should be taken.

Examination

- General examination for:
 - pallor of the mucous membrane in anaemia,
 - petechiae and lymphadenopathy in coagulation disorders,
 - obesity and hirsutism in PCOS.
- Abdominal examination for:
 - masses in leiomyoma and adenomyosis.
- Speculum examination to identify:
 - lower genital tract lesions,
 - endocervical polyps,
 - threads of an IUCD.
- Bimanual examination to determine the size of the uterus.
 - The uterus will be enlarged in leiomyoma, adenomyosis and disturbed pregnancy states.
 - The enlargement may be smooth or irregular in leiomyoma while the enlargement is smooth and less than 16 weeks in size in adenomyosis.
 - Uterine enlargement will be absent or minimal in endometrial carcinoma.

Investigations

- Full blood count.
- Coagulation profile if a coagulation disorder is suspected.
- Pituitary gonadotropin levels and prolactin levels are done in patients with oligomenorrhoea and suspected anovulation.
- Thyroid function tests are done only if a disorder is suspected.
- Transvaginal ultrasound scanning:
 - is done to diagnose fibroids, adenomyosis, endometrial polyps, endometrial hyperplasia and endometrial carcinoma.
 - is a very useful investigation and should be done in all cases, if a structural lesion is suspected.
 - should always be done in all women over the age of 35 years and in cases not responding to medical management.
- The normal endometrium in a premenopausal woman varies in thickness according to the menstrual cycle, from 4 mm in the follicular phase, up to 16 mm in the luteal phase.
 - during menstruation 2–4 mm
 - early proliferative phase (days 6–14): 5–7 mm
 - late proliferative-preovulatory phase: Up to 11 mm
 - secretory phase: 7–16 mm
- In premenopausal women, measurement of endometrial thickness is not a useful test, since major variations of the thickness occur during the normal menstrual cycle. However, transvaginal ultrasound can identify structural causes of AUB and focal thickening of the endometrium due to hyperplasia or cancer.
- Endometrial thickness should be less than 5 mm in a post-menopausal woman.
- Saline infusion sonohysterogram:
 - is done if uterine pathology is suspected, especially to confirm submucous fibroids or endometrial polyps.



- Endometrial biopsy should be done in women over the age of 45 years if:
 - increased endometrial thickness is diagnosed on transvaginal ultrasound scanning,
 - there is significant and persistent intermenstrual, irregular or heavy menstrual bleeding,
 - the bleeding is not responding to medical management.
- Endometrial biopsy is considered in women under the age of 45 years if:
 - there are risk factors for endometrial carcinoma,
 - there is unopposed exposure to oestrogens with increased endometrial thickness as in PCOS,
 - the bleeding is not responding to medical management.
- Office endometrial biopsy is performed as an outpatient procedure.
- Hysteroscopy and biopsy is recommended if irregular endometrial thickening or a focal lesion is diagnosed on transvaginal scanning and in cases of postmenopausal bleeding.

TREATMENT

- If a structural lesion is found appropriate, treatment should be carried out (will be discussed in the relevant chapters).
- If the bleeding is due to irregular use of hormonal contraceptives, regular use should be recommended or the method should be changed.
- Anaemia should be treated.
- Medical treatment is the first line treatment for those without a structural lesion.
- Medical treatment is selected according to the woman's age, desire for contraception, underlying medical conditions and contraindications and tolerance of side effects.
- Those with coagulation disorders will need concomitant factor replacement.

MEDICAL TREATMENT FOR ABNORMAL UTERINE BLEEDING

- **Non-hormonal**
 - Non-steroidal anti-inflammatory drugs
 - Antifibrinolytic drugs
- **Hormonal**
 - Combined oral contraceptive pills
 - Levonorgestrel-releasing intrauterine system
 - Oral norethisterone
 - Oral medroxyprogesterone acetate
 - Danazol
 - GnRH-agonists

Non-hormonal Treatment

Regular, heavy menstrual bleeding can be treated with non-hormonal methods.

- **Non-steroidal anti-inflammatory drugs (NSAIDs) and antifibrinolytics**
 - These can be used alone or in combination to treat regular heavy menstrual bleeding.
 - They will reduce the amount or duration of bleeding but will not stop irregular bleeding.
 - Treatment should be commenced on the first day of bleeding and continued for the duration of the flow.
 - NSAIDs reduce total prostaglandin production through the inhibition of cyclooxygenase, shifting the balance between prostaglandins and thromboxanes to promote uterine vasoconstriction.
 - Mefenamic acid and naproxen are commonly used but other NSAIDs are also effective.
 - NSAIDs relieve dysmenorrhoea as well.
 - Women with heavy menstrual bleeding have been found to have elevated endometrial levels of plasminogen activators, with more local fibrinolytic activity.
 - Tranexamic acid is an antifibrinolytic agent (or plasminogen activator inhibitor) which reduces the menstrual



blood loss. It can be used alone or in combination with NSAIDs. It has no effect on dysmenorrhoea. Intravenous preparation can be used if there is acute blood loss.

Hormonal Treatment

- Is recommended for those with irregular bleeding in the absence of a structural lesion and for those with heavy menstrual bleeding without a structural lesion, who are not responding to treatment with non-hormonal methods.
- Combined oral contraceptive pills, oral norethisterone, oral medroxyprogesterone acetate, and levonorgestrel-releasing intrauterine systems, significantly reduce menstrual bleeding and should be used to treat women with abnormal uterine bleeding.
- Combined oral contraceptive pills are administered cyclically in the same manner as for contraception, though resistant cases may need double the normal dose.
- Norethisterone is administered cyclically, in a dose of 5 mg twice or thrice daily for 21 days, followed by a treatment free period of 7 days, before commencing the next cycle.
- Oral medroxyprogesterone acetate 10 mg 3 times daily for 14 days, from the 14th day of the cycle, with 14 days off treatment is also an option.
- The minimum duration of treatment for the above methods is at least one cycle, but usually treatment is continued for 3 cycles.
- Combined oral contraceptive pills and norethisterone are equally effective, but combined oral contraceptive pills are preferred because they are cheap and freely available. Also they are available in a calendar pack and have the convenience of once daily administration. Norethisterone is the preferred option for women over the age of 40 years and for those who have contraindications for OCP.

- Depot medroxyprogesterone acetate injections are usually not used because of the high incidence of prolonged amenorrhoea and breakthrough bleeding.
- Levonorgestrel-releasing intrauterine system is the ideal method for women over the age of 40 years, who need effective contraception as well. It can be used as an alternative for hysterectomy. Sometimes it can cause breakthrough bleeding.
- Danazol and gonadotropin-releasing hormone agonists will effectively reduce menstrual bleeding, but are not usually used due to side effects.

SURGICAL TREATMENT

The indications for surgery

- Presence of uterine pathology.
- Presence of atypical endometrial hyperplasia/risk of endometrial carcinoma.
- Failure to respond to medical therapy/contraindications for medical treatment.
- Significant anaemia needing blood transfusion.

Surgical options include:

- hysteroscopic polypectomy,
- endometrial ablation,
- myomectomy,
- hysterectomy.
- Hysteroscopic polypectomy is carried out for endometrial and endocervical polyps.
- Endometrial ablation is a minimally invasive surgical option for heavy menstrual bleeding. It may be considered in women who have not responded to medical treatment, have completed childbearing, not at risk of endometrial carcinoma and do not have structural lesions requiring major surgery.
- Myomectomy is carried out for large or symptomatic fibroids in women who wish to preserve their fertility.



UTERINE FIBROIDS

Uterine fibroids may be symptomless or may cause:

- heavy menstrual bleeding, more frequently with submucous tumours,
- an abdominal/pelvic mass,
- pressure symptoms on the renal system or the bowel,
- infertility.
- Pain is not common but may occur in fibroid polyps, torsion of the pedicle of a subserous pedunculated fibroid, degeneration or sarcomatous change.

Fibroids cause a firm, smooth or irregular uterine enlargement which could reach a large size.

The diagnosis is confirmed by ultrasound scanning. Discreet tumours can be seen.

Complications

- Torsion of a pedunculated subserous fibroid.
- Infection of a submucous myoma.
- Malignant change in 0.2% of uterine fibroids.
- Degeneration (hyaline/cystic/fatty/red degeneration). Red degeneration occurs only during pregnancy. It causes pain which could even be severe, vomiting and mild fever. It is treated symptomatically.

TREATMENT

Small symptomless fibroids do not require treatment. Asymptomatic fibroids may warrant treatment in the following situations:

- The size of the fibroid uterus is more than a 12–14 weeks pregnant uterus.
- Rapid growth of the tumour.
- Evidence of hydroureter/hydronephrosis caused by compression of ureters by the tumour.
- Subserous pedunculated fibroids are liable to undergo torsion of the pedicle and hence may be treated even if asymptomatic.

Medical Management

- Heavy menstrual bleeding caused by small submucous fibroids can be treated with mefenamic acid, combined oral contraceptive pills, oral progestogens or LNG/IUS (if the uterine cavity is not distorted).
- GnRH analogues are used to reduce the size and vascularity of fibroids prior to surgery.

Uterine Artery Embolization

- Can be offered for symptomatic fibroids.
- Is contraindicated in the presence of pelvic infection, pregnancy, or if there is a doubt regarding the possibility of malignancy.
- The patient should accept the small risk of needing a hysterectomy if complications occur.
- It has the advantage of shorter hospital stay and quicker return to normal activities.
- The fertility rates are almost similar to that following myomectomy.

Hysteroscopic Resection/Morcellation

- Is recommended for submucous fibroids less than 5 cm in diameter.
- The procedure is carried out under general or spinal anaesthesia.
- Complications include fluid overload, infection, uterine perforation, bowel damage and spread of an undiagnosed malignancy. Hysteroscopic morcellators do not pose the same risk as laparoscopic power morcellators, because any sarcomatous tissue present will not enter the peritoneal cavity.

Myomectomy

- Myomectomy by laparoscopy or laparotomy is indicated in those with symptomatic or large fibroids, who have fertility wishes.
- Profuse bleeding can occur during the procedure as fibroids are enucleated from the capsule. Haemostasis is achieved by diathermy cauterisation and application of deep mattress sutures.



- At least 3 pints of blood should be cross-matched and consent should be taken for hysterectomy.
- It is necessary to open into the endometrial cavity if submucous fibroids are present. If this is done there is a high risk of uterine rupture during a subsequent delivery.

Therefore, a caesarean section has to be performed.

Hysterectomy

Hysterectomy is the treatment for large or symptomatic fibroids in women who do not have fertility wishes.

QUESTIONS

1. A 46-year-old woman complains of continuous vaginal bleeding for two months. No abnormalities are detected on abdominal and vaginal examination. What is the next step in the management?

- Insertion of a levonorgestrel-releasing intrauterine device.
- Hysteroscopy and biopsy.
- Pipelle aspiration.
- Therapeutic trial with norethisterone.
- Transvaginal ultrasound scanning.

2. A 40-year-old multiparous woman complains of frequent irregular vaginal bleeding for two months. Abdominal and vaginal examinations are normal. Transvaginal ultrasound scan reveals an endometrial thickness of 8 mm with no other abnormalities. The haemoglobin percentage is 10 g/dl and the platelet count is within the normal range.

What is the best treatment option?

- Administer combined oral contraceptive pills for 3 cycles.
- Administer norethisterone 5 mg three times daily for 3 cycles.
- Insert a levonorgestrel-releasing intrauterine device.
- Perform endometrial ablation.
- Perform an endometrial biopsy.

3. A 42-year-old multiparous woman complains of irregular bleeding for two months. Abdominal and vaginal examinations are normal. Transvaginal

ultrasound scan reveals an endometrial thickness of 17 mm. Endometrial biopsy reveals simple endometrial hyperplasia without atypia. The haemoglobin percentage is 9 g/dl.

What is the best treatment option?

- Administer combined oral contraceptive pills for 3 cycles.
- Administer norethisterone 5 mg three times daily for 3 cycles.
- Insert a levonorgestrel-releasing intrauterine device.
- Perform endometrial ablation.
- Perform a hysterectomy.

4. A 50-year-old nulliparous woman with diabetes mellitus complains of heavy irregular bleeding for six months. Abdominal and vaginal examinations are normal. Transvaginal ultrasound scan reveals an endometrial thickness of 8 mm with no other abnormalities. The haemoglobin percentage is 9 g/dl. Her BMI is 30.

What is the next step in the management?

- Hysteroscopic visualisation and biopsy.
- Insert a levonorgestrel-releasing intrauterine device.
- Perform pipelle aspiration.
- Perform a hysterectomy.
- Perform endometrial ablation.

5. A 17-year-old girl complains of continuous vaginal bleeding for 3 weeks.



She has had two previous similar episodes. Her BMI is 20. She has mild pallor of the mucus membranes, but no other abnormalities are detected. The haemoglobin percentage is 9 g/dl. The coagulation profile and the ultrasound scan are normal.

What is the most appropriate treatment?

- A. Cyclical treatment with oral contraceptive pills for 3 months.
 - B. Norethisterone 5 mg thrice daily for 10 days.
 - C. Norethisterone 5 mg twice daily for 3 cycles of 21 days.
 - D. Oral iron therapy.
 - E. Tranexamic acid 500 mg 8 hourly for 1 week.
6. A 17-year-old girl complains of heavy menstrual bleeding for 6 months. She has severe dysmenorrhoea on the first day of menstruation. She has 28-day regular cycles with excessive flow for 5 days. No abnormalities are detected on examination. The haemoglobin percentage is 9 g/dl. The coagulation profile and the ultrasound scan are normal.

What is the most appropriate first line treatment?

- A. Oral contraceptive pills for 3 cycles.
 - B. Mefenamic acid 500 mg 8 hourly during menstruation.
 - C. Norethisterone 5 mg three times daily for 7 days during menstruation.
 - D. Norethisterone 5 mg twice daily for 3 cycles of 21 days.
 - E. Tranexamic acid 500 mg 8 hourly during menstruation.
7. A 35-year-old woman complains of heavy menstrual bleeding for 6 months. She has 28-day regular cycles which last for 7 days. Abdominal and vaginal examinations are normal. The haemoglobin percentage is 9 g/dl and the platelet count is within the normal

range. The transvaginal ultrasound scan is normal.

What is the most appropriate first line treatment?

- A. Cyclical treatment with oral contraceptive pills for 3 months.
 - B. Dilatation and curettage.
 - C. Norethisterone 5 mg three times daily for 7 days during menstruation.
 - D. Norethisterone 5 mg twice daily for 3 cycles of 21 days.
 - E. Tranexamic acid 500 mg 8 hourly for 1 week during menstruation.
- 7a. A 36-year-old woman complains of irregular frequent menstrual bleeding for 6 months. Abdominal and vaginal examinations are normal. The haemoglobin level is 9 g/dl and the platelet count is normal. The transvaginal ultrasound scan is normal. Her BMI is 30.

What is the most appropriate first line treatment?

- A. Cyclical treatment with oral contraceptive pills for 3 months.
 - B. Dilatation and curettage.
 - C. Norethisterone 5 mg three times daily for 7 days during menstruation.
 - D. Norethisterone 5 mg twice daily for 3 cycles of 21 days.
 - E. Tranexamic acid 500 mg 8 hourly for 1 week during menstruation.
8. A 48-year-old woman complains of irregular, frequent heavy menstrual bleeding for 2 months. Abdominal and vaginal examinations are normal. Transvaginal ultrasound scan reveals an endometrial polyp.

What is the most appropriate treatment?

- A. Dilatation and curettage.
- B. Endometrial ablation.
- C. Hysterectomy.
- D. Hysteroscopic resection of the polyp.
- E. Polypectomy by hysteroscopy.



9. A 44-year-old woman complains of continuous vaginal bleeding for 6 months. She has had an endometrial biopsy 3 months ago and the histology report revealed proliferative endometrium. She responded to treatment with norethisterone 5 mg twice daily for 3 cycles of 21 days, but bleeding recurred soon after cessation of treatment. Transvaginal ultrasound scan reveals an endometrial thickness of 8 mm. The haemoglobin level is 9.5 gm/dl. The platelet count is normal. Her BMI is 22. She does not have any medical complications.

What is the most appropriate method of treatment?

- A. Insert a levonorgestrel-releasing intra-uterine system.
- B. Perform a hysterectomy.
- C. Perform a dilatation and curettage.
- D. Perform endometrial ablation.
- E. Treat with oral contraceptive pills for 3 cycles.

9a. A 44-year-old woman complains of continuous vaginal bleeding for 6 months. She has had an endometrial biopsy 3 months ago and the histology report revealed proliferative endometrium. She did not respond to medical treatment with norethisterone 5 mg twice daily 21 days. Transvaginal ultrasound scan reveals an endometrial thickness of 9 mm. The haemoglobin level is 9 gm/dl. The platelet count is normal.

What is the most appropriate method of treatment?

- A. Insert a levonorgestrel-releasing intra-uterine system.
- B. Perform a dilatation and curettage.
- C. Perform a hysterectomy.
- D. Perform endometrial ablation.
- E. Treat with oral contraceptive pills for 3 cycles.

10. A 35-year-old woman complains of heavy menstrual bleeding for 1 year. She has one child, 6 years of age. Her haemoglobin level is 8.5 g/dl. Ultrasound scan reveals a single 3 cm × 3 cm sub-mucosal fibroid.

What is the best treatment option?

- A. Administer oral norethisterone continuously for 3 months.
- B. Perform hysteroscopic morcellation.
- C. Perform uterine artery embolization.
- D. Perform hysteroscopic resection.
- E. Perform laparoscopic myomectomy.

11. A 43-year-old woman presents with heavy menstrual bleeding. She has one child 6 years of age. The uterus is enlarged to 24 weeks with multiple fibroids. Her haemoglobin level is 9 g/dl.

What is the best treatment option?

- A. Monthly injection of GnRH analogues for 3 months followed by myomectomy.
- B. Myomectomy followed by monthly injection of GnRH analogues for 3 months.
- C. Hysterectomy and bilateral salpingo-oophorectomy followed by HRT.
- D. Hysterectomy with preservation of both ovaries.
- E. Uterine artery embolization.

12. A 43-year-old nulliparous woman presents with heavy irregular menstrual bleeding. Abdominal examination is normal. Speculum examination reveals a large fibroid polyp protruding through the cervical os. No other fibroids are detected on the ultrasound scan.

What is the best treatment option?

- A. Abdominal hysterectomy.
- B. Hysteroscopic resection.
- C. Myomectomy by laparotomy.
- D. Uterine artery embolization.
- E. Vaginal myomectomy (polypectomy).



13. A 43-year-old multiparous woman presents with heavy menstrual bleeding and dysmenorrhoea which outlast the period. Abdominal and vaginal examinations reveal a uniformly enlarged uterus, corresponding in size to 14 weeks. Ultrasound examination reveals a uniformly enlarged uterus with marked myometrial thickening. What is the most appropriate treatment?
- A. Perform a hysterectomy.
 - B. Treat with Danazol for 6 months.
 - C. Treat with depot medroxyprogesterone acetate injections once a month for 6 months.
 - D. Treat with GnRH analogues for 3 months.
 - E. Treat with Mefenamic and Tranexamic acid during the menstrual period.
14. A 46-year-old woman complains of irregular bleeding for two months. No abnormalities are detected on abdominal and vaginal examination. Transvaginal ultrasound scan reveals an endometrial thickness of 15 mm. Endometrial biopsy reveals atypical endometrial hyperplasia. What is the best treatment option?
- A. Insert a levonorgestrel-releasing intra-uterine device.
 - B. Perform a total hysterectomy and bilateral salpingectomy.
 - C. Perform a total hysterectomy and bilateral salpingo-oophorectomy.
 - D. Perform a total hysterectomy, bilateral salpingectomy and pelvic lymphadenectomy.
 - E. Perform endometrial ablation.
15. A 45-year-old multiparous woman complains of irregular bleeding for two months. No abnormalities are detected on abdominal and vaginal examination. Transvaginal ultrasound scan reveals uniform thickening of the endometrium measuring 12 mm. What is the next step in the management?
- A. Dilatation and curettage
 - B. Hysteroscopic visualisation and biopsy.
 - C. MRI scan.
 - D. Outpatient endometrial biopsy (pipelle aspiration).
 - E. Saline infusion sonohysterography.
16. A 46-year-old woman complains of irregular bleeding for two months. No abnormalities are detected on abdominal and vaginal examination. Transvaginal ultrasound scan reveals irregular thickening of the endometrium with a maximum thickness of 14 mm. What is the next step in the management?
- A. Dilatation and curettage
 - B. Hysteroscopic visualisation and biopsy.
 - C. MRI scan.
 - D. Outpatient endometrial biopsy.
 - E. Saline infusion sonohysterography.

ANSWERS AND EXPLANATIONS

Q. 1 (E)

The possibility of a structural lesion or endometrial malignancy should be considered, because the woman is more than 45 years of age and has continuous bleeding. Therefore, the next step in the management is to perform a transvaginal

ultrasound scan, to exclude structural lesions which can cause continuous bleeding, such as endometrial polyps, endometrial hyperplasia and endometrial carcinoma. Hysteroscopy or pipelle aspiration is performed to confirm the diagnosis of endometrial hyperplasia or



endometrial carcinoma suspected by the ultrasound scan. Insertion of a LNGIUS or treatment with norethisterone is commenced only after excluding structural lesions.

Q. 2 (C)

Since no structural or other abnormalities have been found, the bleeding is most probably due to ovulatory dysfunction, which is common in women over the age of 40 years. Insertion of a levonorgestrel-releasing intrauterine device is the best option, as it will provide long-term treatment as well as effective contraception. Oral norethisterone can be used, but the woman has to take treatment regularly (or there will be breakthrough bleeding) and the treatment is short term. OCP is best avoided in women over the age of 35 years. Endometrial biopsy is not necessary as the endometrial thickness is normal on TVUS and there are no risk factors for endometrial carcinoma. It should be performed if medical treatment fails. Endometrial ablation is considered only if medical treatment fails.

Q. 3 (C)

The risk of endometrial hyperplasia without atypia progressing to endometrial cancer is less than 5% over 20 years and the majority will regress spontaneously during follow-up. Therefore, endometrial ablation or hysterectomy is not necessary. Observation alone with follow-up endometrial biopsies, to ensure disease regression is recommended in women without symptoms and who are at low risk of endometrial carcinoma. Treatment with progesterone is indicated in this woman as she has bleeding. Also progesterone will cause regression of the hyperplasia.

Insertion of a levonorgestrel-releasing intrauterine device is the best treatment option, because compared to oral progesterone it is more effective to control bleeding and to cause regression of the

hyperplasia. It will also provide effective contraception. It has fewer side effects. If oral norethisterone is given, the treatment should be given continuously for 6 months. Cyclical treatment should not be used because it is less effective in inducing regression of endometrial hyperplasia.

Q. 4 (A)

This patient is at high risk of endometrial carcinoma due to the history of prolonged irregular bleeding, age, obesity, diabetes and nulliparity. Therefore, hysteroscopic visualisation of the endometrial cavity and biopsy is preferred to pipelle aspiration. It is the next step in the management and should be performed before commencing treatment, even though the transvaginal scan is normal. If the histology does not reveal hyperplasia or malignancy, medical management with a levonorgestrel-releasing intrauterine device is the best option. Treatment with oral norethisterone is another option. Hysterectomy also should be considered because she has several risk factors for endometrial carcinoma. Endometrial ablation should be avoided because complete and persistent endometrial destruction cannot be ensured and intrauterine adhesion formation may preclude endometrial histological surveillance.

Q. 5 (A)

Structural abnormalities are unlikely because she is an adolescent girl and the USS is normal. The coagulation profile is normal and she is not on any drugs. Therefore, bleeding is due to ovulatory dysfunction and she should be treated with hormones. OCP or oral progesterone can be used. OCP is the preferred option because it is cheap, freely available, comes in a calendar pack and is usually administered once daily. Whatever hormone is used treatment should be continued for at least 3 cycles, to obtain satisfactory control. Treatment with progestogen during the



luteal phase is less effective in maintaining cyclical control. Tranexamic acid is used to reduce heavy menstrual bleeding, but will not stop continuous or irregular bleeding. Oral iron should be given to restore the haemoglobin level.

Q. 6 (B)

Since she has heavy menstrual bleeding and dysmenorrhoea, the best option is treatment with mefenamic acid. Treatment is commenced on the first day of menstruation and continued for the duration of bleeding. Tranexamic acid will reduce the menstrual blood flow but has no analgesic effect. Cyclical treatment with OCP is also effective but is not considered as the first line therapy, for heavy regular menstrual bleeding and dysmenorrhoea, as long treatment cycles are required.

Q. 7 (E)

Since this patient has heavy menstrual bleeding with regular 28-day cycles, without any structural lesions, tranexamic acid administered during each bleeding episode is the first line treatment, as it will reduce the blood loss. Cyclical treatment with norethisterone or OCP is also effective, but is not considered as the first line therapy, for heavy regular menstrual bleeding lesions, cyclical treatment is required. Dilatation and curettage is not necessary as she is under 40 years of age, has no risk factors for endometrial carcinoma and the transvaginal ultrasound scan is normal.

Q. 7a (D)

Since this patient has frequent irregular bleeding without any structural lesions, cyclical treatment with OCP or norethisterone will be effective. However, norethisterone is a better option as she is 36 years of age and is obese.

Q. 8 (D)

Polypectomy by hysterotomy or hysterectomy are major procedures and are not

necessary, as the polyp can be successfully resected under direct vision by hysteroscopy. Endometrial ablation should not be done as it will preclude histological examination.

Q. 9 (A)

This woman who is anaemic due to severe bleeding responded to treatment with norethisterone, but symptoms recurred after cessation of treatment. No abnormalities are detected on the ultrasound scan and the histology is normal. Therefore, the best option is to insert a levonorgestrel-releasing intrauterine device, which would provide long-term treatment. Hysterectomy is also a suitable alternative if bleeding recurs, after inserting a levonorgestrel releasing intrauterine device. Endometrial ablation would be an option if she refuses hysterectomy.

Q. 9a (C)

This woman who is anaemic due to severe bleeding did not respond to treatment with norethisterone, even though no abnormalities are detected on the ultrasound scan and the histology is normal. Therefore, she may not respond to insertion of a levonorgestrel-releasing intrauterine device. Hysterectomy is a better option even though she does not have a structural lesion, as she is 44 years of age, has been having AUB for 6 months, is anaemic and failed to respond to medical treatment. Endometrial ablation would be an option if she refuses hysterectomy.

Q. 10. (D)

Since she has a symptomatic submucous fibroid causing heavy menstrual bleeding, surgical treatment is indicated. The best surgical option is hysteroscopic resection, because it is a small submucous fibroid less than 5 cm in diameter. If myomectomy is performed by laparoscopy or laparotomy, it is necessary to cut through the entire thickness of the myometrium, thereby



increasing the risk of uterine rupture during subsequent deliveries.

Q. 11 (D)

This woman has large fibroids causing heavy menstrual bleeding with resultant anaemia. Even though she has only one child she is 43 years of age. Therefore, the best treatment option is hysterectomy with preservation of the ovaries, if they are normal. GnRH analogues could be given for three months prior to surgery, to reduce the size and the vascularity of the tumour, but it will not cause permanent relief of symptoms, as the fibroids are large and multiple. Hysterectomy is safer and offers a more complete cure than myomectomy and uterine artery embolization. The latter procedures are not indicated as she is more than 40 years of age.

Q. 12 (E)

The fibroid polyp can be removed vaginally after clamping and tying the pedicle. The pedicle of a large fibroid polyp is usually too thick to be twisted like in the case of a normal polypectomy, for the removal of a mucoid cervical polyp. Hysterectomy is not indicated as there are no other uterine fibroids. Uterine artery embolization is not used to treat fibroid polyps.

Q. 13 (A)

This patient has typical symptoms (menorrhagia and secondary dysmenorrhoea), signs (uniform enlargement of the uterus) and ultrasonic features (uniform uterine enlargement with myometrial thickening) of adenomyosis. The only effective treatment for adenomyosis is hysterectomy. Medical treatment is not very effective and is carried out only if the woman desires future fertility.

Q. 14 (B)

Total hysterectomy is the best treatment option because of the risk of underlying

malignancy or progression to cancer. Since this woman is premenopausal removal of ovaries is optional and should be discussed with the woman. However, bilateral salpingectomy should be performed as it reduces the risk of future ovarian cancer. Routine lymphadenectomy has no benefit. Endometrial ablation is not recommended, because complete and persistent endometrial destruction cannot be ensured and intrauterine adhesion formation may preclude endometrial histological surveillance. Insertion of a LNGIUS is recommended, only if the woman strongly desires future fertility.

Q. 15 (D)

Q. 16 (B)

Explanation for questions 15 and 16

When uniform thickening of the endometrium is found on the ultrasound scan in a premenopausal woman, the next step is to perform an endometrial biopsy as an outpatient procedure. Direct visualisation of the endometrial cavity with a hysteroscope and biopsy of suspicious areas is recommended, if there is irregular or focal thickening of the endometrium, or if outpatient sampling fails, or is non-diagnostic. Use of MRI and CT scans are not recommended for diagnosis of endometrial hyperplasia.

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