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**Authors: Ph.D, As.Prof. Loya N.O.**

**As.Prof. Ibadova T.I.**

**Ph.D, prof. Korchynska O.O.**

## **Cases of gynecology. Part II**

**Tutorial for practical lessons of obstetrics and gynecology**

**for students of the 5th course of medical**

**faculty**

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**Tutorial was prepared by:**

**N.O. Loya – PhD, assistant professor of the department of obstetrics and gynecology of medical faculty, Uzhgorod national university**

**T.I. Ibadova – assistant professor of the department of obstetrics and gynecology of medical faculty, Uzhgorod national university**

**O.O. Korchynska – doctor of medical sciences, professor of department of obstetrics and gynecology, medical faculty, Uzhgorod national university**

**Edited by: chief of the department of obstetrics and gynecology state higher educational institution “Uzhgorod national university”, doctor of medical sciences, prof. Malyar V.A.**

**Reviewers:**

**Y.Y. Bobik – doctor of medical sciences, professor, the head of department of maternal and neonatal care, faculty of postgraduate study, Uzhgorod national university**

**V.V. Malyar – Ph.D, associate professor of the department of obstetrics and gynecology, medical faculty, Uzhgorod national university**

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## **ABBREVIATIONS**

<b>APH</b>	antepartum haemorrhage
<b>BMI</b>	body mass index
<b>CIN</b>	cervical intraepithelial neoplasia
<b>COCP</b>	combined oral contraceptive pill
<b>CT</b>	computerized tomography
<b>CVS</b>	chorionic villous sampling
<b>DUB</b>	dysfunctional uterine bleeding
<b>ECG</b>	electrocardiogram
<b>FSH</b>	follicle-stimulating hormone
<b>GP</b>	general practitioner
<b>Hb</b>	haemoglobin
<b>hCG</b>	human chorionic gonadotrophin
<b>HIV</b>	human immunodeficiency virus
<b>HRT</b>	hormone-replacement therapy
<b>INR</b>	international normalized ratio
<b>IUCD</b>	intrauterine contraceptive device
<b>IUS</b>	intrauterine system
<b>IVF</b>	in vitro fertilization
<b>LH</b>	luteinizing hormone
<b>LLETZ</b>	large-loop excision of the transformation zone
<b>LMP</b>	last menstrual period date
<b>MoM</b>	multiples of the median
<b>MRI</b>	magnetic resonance imaging
<b>OAB</b>	overactive bladder syndrome
<b>PCA</b>	patient-controlled analgesia
<b>PCOS</b>	polycystic ovarian syndrome
<b>PMB</b>	postmenopausal bleeding
<b>PMS</b>	premenstrual syndrome
<b>POP</b>	progesterone only pill
<b>PPH</b>	postpartum haemorrhage
<b>SLE</b>	systemic lupus erythematosus
<b>SPD</b>	symphysiopelvic dysfunction

**STI** sexually transmitted infection

**TCRF** transcervical resection of a fibroid

**T3** tri-iodothyronine

**T4** thyroxine

**UTI** urinary tract infection

**WHO** World Health Organization

## CASE 1: POSTOPERATIVE CONFUSION

### History

You are on call in the early evening and are asked to see a woman in the day surgery unit who is confused postoperatively. She is 42 years old and underwent transcervical resection of multiple submucosal fibroids in the early afternoon after presenting with menorrhagia. Four fibroids were resected and the estimated blood loss was 150 mL.

### Examination

The woman knows her name but is disorientated, scoring only 5/10 on a mini-mental state examination. She seems slightly drowsy. The heart rate is 100/min and the blood pressure is 105/70 mmHg. Oxygen saturation is 94 per cent on air. She is afebrile. Chest examination reveals dullness at both bases with fine inspiratory crackles. The abdomen is not distended but there is generalized lower abdominal tenderness. No masses are palpable and there are no signs of peritonism. You can see that there is small amount of blood from the vagina, but the loss is not excessive. You are told that she passed urine an hour ago without difficulty.

The operation note is reviewed and you find that the procedure was essentially uncomplicated but was halted before all the fibroids could be fully resected because of the fluid imbalance. The fluid deficit is recorded as 1010 ml. However you review the actual fluid chart and it is as follows:

*Fluid input (glycine, via operating hysteroscope input channel):*

1000 ml; 1000 ml; 1000 ml; 950 ml

*Fluid output (via operating hysteroscope output channel): 1940 ml*

INVESTIGATIONS		
		<i>Normal range</i>
Haemoglobin	10.4 g/dL	11.7–15.7 g/dL
Haematocrit	29%	36–58%
White cell count	$7.1 \times 10^9/L$	$3.5–11 \times 10^9/L$
Platelets	$302 \times 10^9/L$	$150–440 \times 10^9/L$
Sodium	129 mmol/L	135–145 mmol/L
Potassium	3.1 mmol/L	3.5–5 mmol/L
Urea	1.6 mmol/L	2.5–6.7 mmol/L
Creatinine	56 mmol/L	70–120 mmol/L



**Figure 1.1** Chest X-ray.

### Questions

- What is the diagnosis and why has it occurred?
- How would you manage this patient?

## ANSWER 1

The chest examination and X-ray suggest pulmonary oedema. Investigations show hyponatraemia and this is a recognized cause of a confusional state. There is also hypokalaemia which puts her at risk of dysrhythmia or cardiac arrest.

There has been an error in calculating the fluid deficit such that the deficit is in fact 2010 mL rather than 1010 mL. The hyponatraemia is therefore caused by fluid overload, a recognized complication of transcervical resection procedures. The normal upper limit for the procedure is 1000 mL and in this case twice that volume has been absorbed.

### Management

The mainstay of management is supportive with monitoring of electrolytes and fluid restriction. Potassium supplementation should be given and electrocardiogram (ECG) monitoring employed until the potassium is normal.

The woman should be transferred to a high-dependency bed and given oxygen. Arterial blood gas should be monitored, and if the pulmonary oedema worsens then diuretics will be needed.

The hyponatraemia usually corrects itself with time and fluid restriction, and the acute confusional state would be expected to resolve as the electrolytes normalize.

The fibroids were not completely resected and a repeat ultrasound or outpatient hysteroscopy may be considered after a few weeks to check whether further surgery is needed – sometimes degeneration may occur as a result of thermal damage or inflammation from the initial procedure. Alternatively any fibroid remnants may be expelled spontaneously through the cervix and vagina.

### KEY POINTS

- Fluid overload and consequent hyponatraemia is a recognized complication of transcervical resection procedures.
- Accurate input/output monitoring is vital during this procedure.
- Treatment is supportive until electrolytes return to normal.

## CASE 2: POSTMENOPAUSAL BLEEDING

### History

A 58-year-old woman reports postmenopausal bleeding for 6 months. Initially she did not pay much attention to it but she has had several episodes and it now occurs most days. It is generally light but for a few days recently it was almost like a period. There is no associated pain. The woman has never married or been sexually active. She has no previous gynaecological history and has never had a smear test. She was diagnosed with type 2 diabetes 4 years ago for which she takes oral hypoglycaemics. However she is not very compliant with diet modification, and her blood glucose is not well controlled such that starting insulin is being considered.

### Examination

The woman is obese with a body mass index of 32 kg/m<sup>2</sup>. Her blood pressure is 150/80 mmHg. The abdomen is non-tender, but due to her adiposity it is not possible to feel abdominal masses.

External genital examination is unremarkable. Speculum and bimanual examination are not performed as she has never been sexually active.

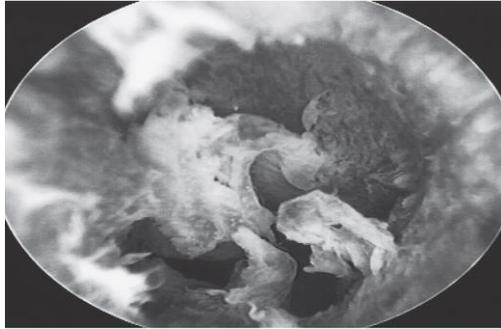
Transvaginal ultrasound was not possible and a transabdominal ultrasound examination was therefore performed with a full bladder.

## INVESTIGATIONS

Transabdominal ultrasound report: The uterus is normal size and anteverted. The endometrium could not be clearly visualized. Both ovaries appear normal. Ultrasound view was restricted by patient adiposity.

Examination under anaesthetic and hysteroscopy: The vagina and cervix appear normal. Hysteroscopy showed an irregular vascular mass arising from the uterine wall with contact bleeding. Curettage was performed and products sent for histological examination.

The findings at hysteroscopy are shown in Fig. 2.1.



**Figure 2.1** Hysteroscopy findings (see colour insert).

### Questions

- What is the likely diagnosis?
- If this is confirmed how would you manage this patient?

### ANSWER 2

Postmenopausal bleeding should be considered to be due to endometrial carcinoma until proven otherwise. In many cases the diagnosis turns out to be benign. However in this case early suspicion is raised by the risk factors for endometrial carcinoma:

- type 2 diabetes
- obesity
- nulliparity.

There is also a long history of significant bleeding suggesting a more significant pathology. In women who can tolerate the examination, the diagnosis may be made by outpatient endometrial sampling. In this case however the inability to examine properly meant it was appropriate to investigate the uterine cavity and the rest of the lower genital tract under anaesthetic. The diagnosis of endometrial cancer was confirmed on histology report from the curettage specimen.

### Management

Most (up to 90 per cent) of women with endometrial cancer have localized disease and are usually cured by hysterectomy and bilateral salpingo-oophorectomy. Magnetic resonance imaging (MRI) scan prior to surgery should be carried out to check for possible lymph node involvement, in which case lymph node biopsy or excision should be performed at the time of surgery. Formal staging is histological. Adjuvant radiotherapy is indicated if there is deep invasion of the myometrial muscle (50 per cent of the depth) or in grade 3 disease.

<b>! FIGO staging of endometrial carcinoma</b>	
<b>Stage</b>	<b>Prognosis (5-year survival rate)</b>
I IA Tumour confined to the uterus, no or <50% myometrial invasion IB Tumour confined to the uterus, >50% myometrial invasion	85%
II Cervical stromal invasion, but not beyond uterus	75%
III IIIA Tumour invades serosa or adnexa IIIB Vaginal and/or parametrial involvement IIIC Pelvic/para-aortic node involvement	45%
IV IVA Invasion into bladder and/or bowel mucosa IVB Distant metastases including abdominal metastases and/or inguinal lymph nodes	25%

<b>KEY POINTS</b>
<ul style="list-style-type: none"> <li>• Postmenopausal bleeding is due to endometrial cancer until proven otherwise.</li> <li>• Women with prolonged or heavy bleeding are more likely to have pathology.</li> <li>• Endometrial cancer is staged histologically.</li> <li>• The majority of women present with stage I disease and have a good prognosis (85 per cent 5-year survival).</li> </ul>

### **CASE 3: PELVIC PAIN**

#### **History**

A 24-year-old woman presents with pelvic pain and painful sexual intercourse for 2 years. She is worried that she may have an ovarian cyst. The pain occurs at any time of the menstrual cycle but is worse during menstruation. It can also be worse when she passes urine or opens her bowels. There is no relation to exercise.

She has been with her current sexual partner for 6 months and the pain occurs nearly every time she has intercourse unless penetration is very gentle. She has never been diagnosed with any sexually transmitted infections. She was pregnant once at the age of 19 years but this ended in a spontaneous complete miscarriage.

She opens her bowels regularly and denies any bloating, constipation, diarrhoea or mucus in the stool. She had an episode of cystitis a few years ago which responded to antibiotics.

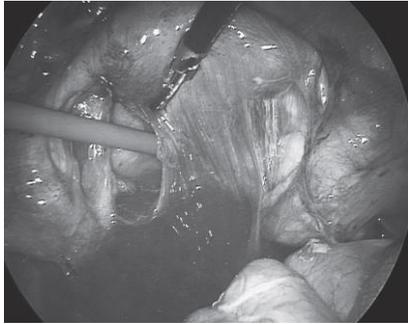
There is no other medical history of note and she takes no regular medications.

#### **Examination**

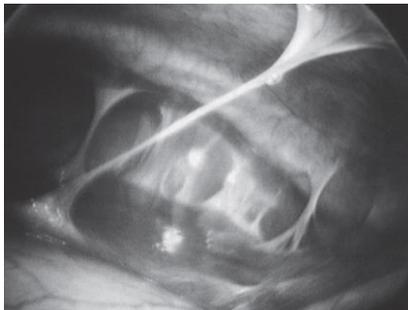
The abdomen is not distended and there is no organomegaly. No masses are palpable but there is suprapubic tenderness. Speculum examination shows a normal smooth grey/white coloured discharge and swabs are taken. The uterus is anteverted but has limited mobility and is tender on movement. There are no adnexal masses but the adnexae are tender.

## INVESTIGATIONS

Urinalysis: protein negative; blood negative; leucocytes negative; nitrites negative  
Endocervical swab: negative  
Chlamydial swab: negative  
High vaginal swab: negative  
Transvaginal ultrasound report: the uterus is normal sized and axial. The endometrium measures 12 mm. Both ovaries are of normal morphology but appear adherent to the posterior uterus and show limited mobility. There is no free fluid in the Pouch of Douglas.



**Figure 3.1** Laparoscopy image of the pelvis.



**Figure 3.2** Laparoscopy image of the right upper abdomen.

### Questions

- What is the diagnosis?
- How would you manage this patient?
- What are the long-term implications of this disease?

### ANSWER 3

The laparoscopy image shows in Fig. 3.1 pelvic adhesions suggestive of previous infection. The 'violin-string' perihepatic adhesions in Fig. 3.2 are classical of Fitz-Hugh-Curtis syndrome, generally seen with previous chlamydial infection though also described with gonorrhoea. These findings can develop in the absence of a clinically recognized infective episode.

The woman therefore has chronic pain from pelvic inflammatory disease. Negative swabs would suggest that she may no longer be infected with chlamydia.

### Management

The pain may be helped with laparoscopic adhesiolysis. The perihepatic adhesions should be ignored as they are not causing symptoms. Otherwise pain-management options are analgesics or possible uterosacral nerve ablation.

Even though there is no evidence of current active infection, the tests have limited sensitivity so it is worthwhile treating the woman and her partner with a course of antibiotics for pelvic inflammatory disease.

### **! Long-term complications of pelvic inflammatory disease**

- Chronic pain.
- Infertility: tubal infertility is likely in this woman, and if she fails to conceive spontaneously then hysterosalpingogram should be performed with referral for assisted conception if obstruction is confirmed.
- Ectopic pregnancy: spontaneous and in vitro fertilization pregnancies are at increased risk of implanting in the damaged tubes, and an early transvaginal scan should be advised if she becomes pregnant.
- The woman should also be advised that despite the likely subfertility, spontaneous pregnancy may still occur so she should use effective contraception if she does not want to conceive.

### **KEY POINTS**

- Fitz–Hugh–Curtis syndrome is the presence of perihepatic adhesions in association with previous chlamydial or gonococcal infection.
- Treatment of both partners is appropriate.
- Chronic pain, ectopic pregnancy and tubal infertility are long-term consequences of pelvic inflammatory disease.

## **CASE 4: AMENORRHOEA**

### **History**

A 14-year-old girl is seen by her general practitioner because her mother is worried that her periods have not started. Her older sister started at 13 years and her younger sister has just started her periods at 12 years, and she is now embarrassed at school as her friends are always discussing their periods and she has not told them that she has not had one.

Her mother is also concerned because she has not developed pubic and axillary hair or breast enlargement.

She was born at 38 weeks by spontaneous vaginal delivery and has never had any particular medical problems. She reached all her developmental milestones as a child, although has not started a teenage growth spurt and is the second shortest girl in her class.

She eats normally with her family and denies any eating disorder. She takes part in school sport but does not exercise to excess.

She is sociable with her friends but has never had a boyfriend.

Her school academic performance is about average, although she does not do as well as her siblings who are all in the top streams of their years.

### **Examination**

On examination she is 120 cm and weighs 59 kg. She has no abnormal facial features but has a wide carrying angle (cubitus valgus) and a wide neck. There is no apparent breast development and the nipples appear widely spaced. No axillary hair growth is apparent.

Abdominal examination is unremarkable. The external genitalia are normal though no pubic hair is visible. Internal examination is not performed.

INVESTIGATIONS		
		<i>Normal range</i>
Follicle-stimulating hormone	24 IU/L	1–11 IU/L
Luteinizing hormone	20 IU/L	0.5–14.5 IU/L
Oestradiol	84 pmol/L	70–510 pmol/L
Prolactin	239 mu/L	90–520 mu/L
Karyotype: 45XO		
Free thyroxine	17 pmol/L	11–23 pmol/L
Transabdominal ultrasound report: the uterus appears small and anteverted. The endometrium appears smooth and thin, measuring 2.4 mm. Both ovaries are visualized and appear to be of small volume. No follicles are seen.		

## Questions

- What is the most likely diagnosis and how might this be confirmed?
- What are the principles of management for this girl?

## ANSWER 4

The clinical features are typical of those of monosomy X (Turner's syndrome). This genetic condition is associated with the absence of one X chromosome (45 XO karyotype), occurring in approximately 1 in 2500 live female births. It is confirmed on chromosomal analysis.

In rare cases it may occur as a mosaic form (XX/XO), in which case the features are milder and the woman may start menstruating but then experience premature ovarian failure and secondary amenorrhoea.

### **! Common clinical features of Turner's syndrome**

- Webbed neck
- Broad chest with widely spaced nipples ('shield chest')
- Wide carrying angle (cubitus valgus)
- Short stature (maximum 150 cm without treatment)
- Short fourth metacarpal
- Low-set ears
- Low hairline
- Hypoplastic nails
- Hypertension
- Congenital heart disease (e.g. coarctation of the aorta)

## Management

Management of Turner's syndrome should be carried out in a specialist referral centre.

- *Psychological*: the implications of Turner's syndrome diagnosis are devastating for the child and for the family. The absence of periods may be stigmatizing and the long-term lack of fertility is a very serious concept that may be difficult for a young girl to comprehend.

- *Medical*:

- The short stature should be treated to enable the girl to reach her full height potential. Human growth hormone is given to achieve this.

- Oestrogen therapy initially with ethinyl estradiol enables secondary sexual characteristics of breast development and pubic and axillary hair to develop. Cyclical progestogens are added later to induce

a withdrawal bleed ('period') for social reasons and to protect the endometrium from hyperplasia or malignancy in the long term. Some form of oestrogen therapy then needs to be continued until the time of natural menopause (ideally 50 years) to prevent early-onset osteoporosis. • *Fertility*: fertility options are available with ovum donation and hormonal support.

### KEY POINTS

- Turner's syndrome is a cause of primary amenorrhoea.
- Most girls will be diagnosed in early childhood because of small stature or other physical features, but some will only be diagnosed when menarche fails to occur.
- Treatment, usually hormonal, to protect bone density is essential.

## CASE 5: PERMANENT CONTRACEPTION

### History

A couple attends the antenatal clinic requesting sterilization. They have three children, aged 10, 7 and 5, all born by caesarean section. The oldest son has Asperger's syndrome. Until now they have been using the contraceptive pill but as she is slightly overweight (body mass index 29) and has a family history of cardiovascular disease, her GP has advised her to seek an alternative. She tried the levonorgestrel intrauterine system (IUS) but had it removed after 6 months due to irregular bleeding.

She is aged 38 and is otherwise healthy. She does not smoke and takes no other medication.

Her husband is supportive and initially planned a vasectomy but after initial consultation decided that he could not go through with it due to his fear of the procedure.

They have read widely on the Internet and decided that laparoscopic sterilization is the most suitable method for them in view of its reliability and permanence.

### Examination

Blood pressure is 150/85. The body mass index is 29. On abdominal inspection the caesarean section scars are noted as well as an appendectomy scar.

The abdomen is soft and non-tender with no palpable masses. Speculum examination is unremarkable and on bimanual examination the uterus is normal size, mobile and anteverted.

### Questions

- How would you establish whether sterilization really is an appropriate choice for this couple?
- If you agree with her request for laparoscopic sterilization in principle, how would you counsel regarding the procedure before agreeing to proceed?
- Are there any other suitable contraceptive options that this woman should consider apart from laparoscopic sterilization?

### ANSWER 5

#### Appropriateness of sterilization

The fact that this couple's youngest child is 5 years old would suggest that they have had time to consider having further children and have definitively decided against this. It may be that the eldest child with Asperger's means that they are particularly keen to avoid pregnancy due to their involvement with his care. However in counselling couples regarding sterilization, it is important to encourage them to consider whether there are any circumstances under which their decision might

change, e.g. the death of an existing child (or children) or the breakup of their relationship and wanting to have a child with a new partner.

Assuming that these have been considered and other non-permanent contraceptive options offered, or as in this case of the levonorgestrel IUS having been tried, then sterilization is a reasonable and effective choice.

### **Counselling before laparoscopic sterilization**

In addition to an explanation of the laparoscopic sterilization procedure, the following points should be discussed and documented before consent for sterilization is obtained:

- Sterilization should be considered a permanent procedure. Reversal of tubal sterilization has low success rates (maximum 60 per cent).
- Up to 10 per cent of women regret their decision for sterilization.
- The failure rate of laparoscopic sterilization is 2 in 100 women who have been sterilized for one year.
- If a pregnancy does occur after sterilization then there is an increased risk of this being an ectopic pregnancy. Early ultrasound scan is therefore recommended in such circumstances.
- Laparoscopy carries associated risks of bleeding, infection, injury to bowel or bladder or blood vessels (3 in 1000 risk of significant harm), thrombosis and anaesthetic complications. These risks may be increased in this case due to the woman's previous surgery, blood pressure and body mass index.
- There is a small chance that sterilization procedure will be impossible due to technical difficulty, in which case she should be asked to give consent for open sterilization through a mini-laparotomy incision.

### **Alternatives to laparoscopic sterilization**

Transcervical hysteroscopically performed sterilization is a relatively new method of sterilization. It involves the insertion of small flexible inserts into the fallopian tubes via a hysteroscope. These inserts cause a fibrotic reaction within the tubes so that within 3 months the tubes are occluded. The occlusion needs to be confirmed with hysterosalpingography however before alternative contraception can be stopped.

In this woman's case this should be considered particularly as she is overweight, mildly hypertensive and has had four previous abdominal operations, such that her risks of surgery are significant.

## **CASE 6: LABILE MOOD AND ABDOMINAL PAIN**

### **History**

A 37-year-old mother presents to her general practitioner with cyclical labile mood swings. She says that she has always suffered with PMS (premenstrual syndrome) and that it is in the family as her mother 'had to have a hysterectomy' for the same problem. She reports her periods as always having been painful and that she has always been irritable leading up to a period. However now she feels that she is not herself for at least 2 weeks before her period and that the pain has worsened. She also notices headaches, swelling and breast tenderness.

Her periods are generally regular with bleeding for up to 6 days every 27–31 days. She has had three children all by normal vaginal delivery and the youngest is now 5 years old. She has no other medical history of note.

She has been married for 14 years and she says she often feels aggressive toward her husband or alternatively is tearful and low. Prior to having children she worked in a bank and is not sure whether to return as she feels she might be unable to cope.

### **Examination**

No abnormality is found on abdominal or neurological examination.

### **Questions**

- What is the differential diagnosis?
- How would you further determine the cause of the symptoms and manage this patient?

### **ANSWER 6**

The woman clearly feels that this is a gynaecological problem and that she has PMS. The diagnosis should be confirmed with evidence of symptoms occurring in the luteal phase and resolving within a day or two of menstruation starting. The differential diagnosis is depression which can manifest in a similar way to PMS.

A symptom diary is needed for recording symptoms for each day, over a 3-month period. The woman should annotate a chart with the severity of each symptom and when menstruation occurs. PMS should start after midcycle, symptoms should resolve with the period and there should be a number of symptom-free days each month.

An example of a symptom diary is shown in Fig. 6.1.

### **Management**

If confirmed then the diagnosis should be discussed with the woman, offering appropriate understanding and support but explaining that management is variable in the success for each woman and that 'one size does not fit all'. Vitamins and oil of evening primrose are not proven in trials but may have a placebo effect.

Interruption of ovulation with the oral contraceptive pill is often successful in women under the age of 35 years.

Selective serotonin reuptake inhibitors taken continuously or only in the luteal phase have a good success rate in randomized trials, and the woman should be advised that they have a specific effect with PMS rather than just a general antidepressant effect. There is limited evidence for the role of continuous oestrogens or progestogens for the management of PMS. In cases resistant to other treatments, a therapeutic trial of gonadotrophin-releasing hormone analogues to induce a pseudomenopause can be considered, though the associated hypoestrogenic side effects may themselves need treating with added-back oestrogen.

Hysterectomy would not be helpful unless the ovaries were also removed, and this would involve risk of significant morbidity with the need for hormone-replacement therapy afterwards which may have its own side effects or complications.

### **KEY POINTS**

- Premenstrual syndrome is diagnosed with a symptom diary.
- No single treatment is effective for all women.
- Selective serotonin reuptake inhibitors are effective in many women with premenstrual syndrome.

## CASE 7: CERVICAL CANCER

### History

A 28-year-old woman was referred to the colposcopy clinic because of intermenstrual and postcoital bleeding. On examination a macroscopically visible lesion was present and on colposcopy features of malignancy were seen. Subsequent biopsy showed invasive squamous carcinoma of the cervix.

The woman was informed of the diagnosis and as a result went on to undergo an examination under anaesthetic, cystoscopy and proctoscopy for staging. The mass was found to be 3 cm in size and there was no palpable extension into the uterus, vagina or parametrial tissues. The cystoscopy and proctoscopy were both normal.

INVESTIGATIONS		
		<i>Normal range</i>
Haemoglobin	12 g/dL	11.7–15.7 g/dL
White cell count	$8 \times 10^9/L$	$3.5-11 \times 10^9/L$
Platelets	$344 \times 10^9/L$	$150-440 \times 10^9/L$
Sodium	138 mmol/L	135–145 mmol/L
Potassium	3.5 mmol/L	3.5–5 mmol/L
Urea	3.6 mmol/L	2.5–6.7 mmol/L
Creatinine	76 mmol/L	70–120 mmol/L
<p>Chest X-ray report: normal heart and lung fields. No abnormalities detected. Renal tract ultrasound report: normal sized kidneys. Both ureters are of normal caliber with no evidence of obstruction.</p> <p>She has had one child but had been hoping to have at least one more and is devastated by the diagnosis.</p>		

### Question

- What are the possible treatment options and their potential complications?

### ANSWER 7

Cervical cancer may be treated surgically or by radiotherapy. Staging is performed clinically at examination under anaesthetic as described.

! Cervical cancer staging		
Staging		Prognosis (5-year survival)
I Confined to cervix	IA1 Microscopic lesion. Invasion <3 mm depth and lateral spread <7 mm	95%
	IA2 Microscopic lesion. Invasion >3 mm and <5 mm with lateral spread <7 mm	
	IB1 Clinically visible lesion <4 cm in greatest dimension	80%
	IB2 Clinically visible lesion >4 cm in greatest dimension	
II Invades beyond uterus but not to pelvic wall or lower 1/3 of vagina	IIA1 Involves upper 2/3 of vagina, without parametrial invasion, <4 cm in greatest dimension IIA2 Involves upper 2/3 of vagina, without	60%

	parametrial invasion, >4 cm in greatest dimension IIB With parametrial involvement	
III Extends to pelvic wall and/or involves lower 1/3 of vagina and/or causes hydronephrosis or non-functioning kidney	IIIA Involves lower 1/3 of vagina with no extension to the pelvic wall IIIB Extension to pelvic wall and/or hydronephrosis or non-functioning kidney	35%
IV Extension beyond true pelvis or involves mucosa of bladder or rectum	IVA Spread of the growth to adjacent organs IVB Spread to distant organs	15%

### Radical hysterectomy

Up to stage IB women may be treated with radical hysterectomy (also known as Wertheim's hysterectomy). This involves removal of the uterus, cervix, pelvic lymph nodes and parametrial tissue as well as the upper third of the vagina. Complications involve bleeding and infection. Ureteric damage may occur and blood vessel injury is not uncommon. Postoperative complications include infections of the chest, wound or urinary tract as well as venous thromboembolism and later-onset lymphoedema from interruption of lymphatic drainage from the lower limbs.

The advantage of this treatment is that it preserves ovarian function, important for wellbeing and prevention of osteoporosis. It also avoids the complications of radiotherapy outlined below.

### Trachelectomy

This involves removal of the cervix, lymph nodes and parametrial tissue with conservation of the ovaries and uterine body with insertion of a suture (cerclage) at the base of the uterus. It is used selectively for women with early stage disease who wish to preserve their fertility.

### Radiotherapy

Disease beyond stage IB, and postmenopausal women should be treated with radiotherapy which is effective but is associated with long-term effects of bowel stenosis, cystitis and vaginal stenosis. It also generally renders women menopausal due to radiation to the ovaries.

### KEY POINTS

- Cervical carcinoma should be considered in any woman with intermenstrual or postcoital bleeding.
- Disease staging is clinical, under anaesthetic.
- Cervical carcinoma may be treated surgically or by radiotherapy, depending on the stage of disease.

## CASE 8: URINARY INCONTINENCE

### History

A 49-year-old woman presents with leaking of urine. This started after the birth of her third child 10 years ago and has gradually worsened. She has not felt comfortable talking to her general practitioner about it until now. The leakage occurs on coughing and laughing. However she has recently started to play badminton to lose weight and the symptoms are much worse, but she has discovered though that the symptoms are much better if she wears a tampon while playing. There is no dysuria, nocturia, frequency or urgency. She is mildly constipated. All her children were born by induction of labour post-term. They weighed 3.6 kg, 3.8 kg and 4.1 kg respectively and she needed a forceps delivery for the third child after failure to progress in the third stage. She has a

regular menstrual cycle and has had a laparoscopic sterilization. There is no other relevant medical history and she takes no medications. She smokes 15 cigarettes per day and does not drink alcohol.

### Examination

Body mass index is 29 kg/m<sup>2</sup>. There are no significant findings on abdominal or vaginal examination.

### INVESTIGATIONS

Urinalysis: protein negative; blood negative; leucocytes negative; nitrites negative

Urodynamics report: the first urge to void was felt at 300 mL. The maximum bladder capacity was 450 mL. Involuntary loss of urine was noted with coughing during bladder filling, in the absence of detrusor activity.

### Questions

- What is the diagnosis?
- How would you advise and manage this woman?

### ANSWER 8

This woman is suffering from stress incontinence. Stress incontinence can be diagnosed from the history – involuntary loss of urine when the intra-abdominal pressure increases (such as with exercise or coughing). Urodynamic stress incontinence (formerly referred to as genuine stress incontinence) is the involuntary loss of urine when the intravesical pressure exceeds the maximum urethral pressure in the absence of a detrusor contraction and can only be diagnosed after urodynamic testing.

### Management

#### Conservative management

- Lifestyle: the woman should be advised to control factors that exacerbate symptoms:
- Reduce weight
- Stop smoking to relieve chronic cough symptoms
- Alter diet and consider laxatives to avoid constipation.
- Pelvic floor exercises: properly taught pelvic floor muscle training is a very effective treatment and can cause improvement in symptoms or cure in up to 85 per cent of women.

### Surgical management

#### Tension-free vaginal tape or transobturator tape

These minimally invasive techniques (known as mid-urethral sling procedures) involve insertion of a tape to support the urethra and bladder when the intra-abdominal pressure increases (such as during coughing). The TOT (which uses the obturator route) is associated with a slightly lower rate of perforation of the bladder or vagina and of voiding difficulty when compared to the TVT (which uses the retropubic route) but may result in a higher chance of groin pain or erosion of the tape into the vagina.

### Colposuspension

This open or laparoscopic procedure to support the urethra is carried out much less frequently now, as the effectiveness of the mid-urethral slings is comparable with a lower risk of complications and more rapid postoperative recovery.

### Bulking injections

Periurethral injection of bulking agents (such as collagen) may be used in refractory cases or for women unfit for surgery. These agents augment the urethral wall and increase resistance to urinary leakage.

### Medical management

Duloxetine is a serotonin-norepinephrine reuptake inhibitor (SNRI) which reduces the frequency of episodes of stress incontinence in women declining or otherwise unsuitable for surgical management.

<b>KEY POINTS</b>
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- |                                                                                                                                                                                                                                                                                |
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| <ul style="list-style-type: none"><li>• Stress incontinence is a clinical diagnosis.</li><li>• First-line treatment is avoidance of exacerbating factors and pelvic muscle exercises.</li><li>• Urodynamic stress incontinence should be confirmed prior to surgery.</li></ul> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## CASE 9: PELVIC PAIN

### History

A 21-year-old student presents with left iliac fossa and lower abdominal pain. The pain is present intermittently with no pattern except that it is generally worse on exercise and so she has stopped running to keep fit. The pain started about 6 months before and has gradually become more frequent and severe. It is no worse with her periods and she is not currently sexually active so cannot report any dyspareunia. Her periods are regular and not particularly heavy or painful. She has no previous gynaecological problems. She has had one sexual partner who she was with for 4 years. She denies any sexually transmitted infections.

Medically she is fit and well, and has only been admitted to hospital for wisdom teeth removal and for tonsillectomy as a child. She takes no medications.

### Examination

The woman is slim and the abdomen is soft with a palpable mass in the left iliac fossa. This is firm and feels mobile. It is moderately tender. Speculum examination is normal. Bimanual examination confirms an 8 cm mass in the left adnexa. The uterus is palpable separately and is mobile and anteverted. The right adnexa is normal.

<b>INVESTIGATIONS</b>
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An abdominal X-ray is shown in Fig. 29.1.
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Transvaginal ultrasound scan findings are shown in Fig. 9.2.
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**Figure 9.1** Abdominal X-ray.



**Figure 9.2** Transvaginal ultrasound image showing a transverse view through the left adnexa.

### Questions

- What is the diagnosis?
- How would you manage this woman?

### ANSWER 9

The woman has a palpable left adnexal mass, which is shown on ultrasound to be a complex ovarian cyst. The ultrasound appearance shows an ovarian cyst. The appearance is of mixed echogenicity with ‘acoustic shadowing’ and this appearance is typical for a dermoid cyst (also known as a benign teratoma). The X-ray shows the presence of teeth in the left iliac fossa region.

These cysts are common. Typically sebaceous fluid is present, often in association with strands of hair or sometimes teeth. If active thyroid tissue develops the woman may present with features of hyperthyroidism and the cyst is referred to as a struma ovarii.

The management is surgical with ovarian cystectomy, due to the size of the cyst and the symptoms. Ideally this can be performed laparoscopically. In asymptomatic cysts there is a possibility of expectant management (‘watch and wait’). However the risks of leaving the cyst are:

- malignancy occurs in up to 2 per cent of dermoid cysts
- ovarian torsion is thought to be relatively common in women with dermoid cysts, and if this occurs it is a medical emergency, which may involve oophorectomy.

The woman should be advised that the cysts are common and there is very little chance that it is malignant or that removing it will affect her fertility. However recurrence may occur in either ovary and she should seek further consultation if she develops recurrent pain.

#### KEY POINTS

- Dermoid cysts (mature cystic teratoma) are a common cause of ovarian cysts in young women. • They commonly display a classic appearance on X-ray or ultrasound scan.
- Surgery is usually recommended because of a small risk of torsion or malignant transformation.

## CASE 10: EARLY MENARCHE

### History

An 8-year-old girl is referred by the general practitioner because her periods have started. She was born at term by spontaneous vaginal delivery after an uneventful pregnancy. She has had the normal childhood illnesses but there is no significant serious medical history of note. She takes no medication. Her physical development has been unremarkable until a year ago when she changed from being average height to the second tallest in her class.

Educationally she is achieving at a similar level to her peers. She has many friends and no behavioural problems. She is the first of three children and her mother reports her own periods starting at 11 years.

### Examination

General examination is normal. The girl has significant breast bud development and some fine pubic hair. Further genital examination is not performed.

### Questions

- What is the diagnosis and what are the problems associated with it?
- How would you investigate and manage this girl?

### ANSWER 10

The average age of menarche is 13 years, and the start of periods before the age of 9 years, as in this case, is classified as precocious puberty.

In normal puberty, girls tend to start breast bud development from 9–13 years, start pubic hair growth from 10–14 years and menarche starts at 11–15 years. An increased rate of growth starts at 11–12 years and growth finishes at around 15 years. When these changes occur early but in the normal sequence, the precocious puberty is usually of no significant consequence and termed constitutional early development. This is often familial. However if it occurs very early or in an abnormal sequence, a pathological cause is more likely.

#### **! Causes of precocious puberty**

- Constitutional (>90 per cent)
- Hypothyroidism
- CNS lesions (hydrocephaly, neurofibromatosis)
- Ovarian tumour
- Adrenal tumour
- Exogenous oestrogens

#### **Problems of precocious puberty**

- *Growth*: although the growth spurt starts early in precocious puberty, growth also stops prematurely (premature epiphyseal closure) and therefore girls with precocious puberty are at risk of having a reduced final stature if untreated.
- *Embarrassment*: early secondary sexual characteristics and the onset of periods can be very difficult for a girl to deal with at a young age.
- *Social interaction*: difficulties can occur when people who do not know the child's chronological age assume a level of intellectual and emotional maturity according to the child's physical maturity (apparent age).

#### **Investigation**

Gonadotrophins, prolactin and thyroid hormones should be checked to confirm that they correlate with normal pubertal levels. Computerized tomography (CT) or magnetic resonance imaging (MRI) may be necessary for visualization of the pituitary stalk. Abdominopelvic ultrasound will rule out an ovarian or adrenal tumour. Bone scan will determine biological bone age to ascertain whether pituitary suppression is indicated.

#### **Management**

As the changes in this girl seem to be in a normal sequence and she is within two years of the normal age of menarche she can be managed expectantly. However if the changes had started at a younger age, pituitary suppression should be started with gonadotrophin-releasing hormone analogues, to delay the growth spurt and thus maintain full final height.

### KEY POINTS

- Over 90 per cent of girls with precocious puberty have constitutional (idiopathic) precocious puberty with no pathological cause, but an abnormal sequence of pubertal development or very early puberty should trigger further investigation.
- The major problems of precocious puberty are short final stature and social embarrassment.

## CASE 11: EXCESSIVE HAIR GROWTH

### History

A 19-year-old woman was referred by her general practitioner (GP) with increased hair growth. She first noticed the problem when she was about 16 years old and it has progressively worsened such that she now feels very self-conscious and will never wear a bikini or go swimming. It also affects her forming relationships. The hair growth is noticed mainly on her arms, thighs and abdomen. Hair has developed on the upper lip more recently. She has tried shaving but this seems to make the problem worse. She feels depilation creams are ineffective. Waxing is helpful but very expensive and she has bleached her upper-lip hair. Her GP has not prescribed any medication in the past. There is no significant previous medical history of note. Her periods started at the age of 13 years and she bleeds every 30–35 days. The periods are not painful or heavy and there is no intermenstrual bleeding or discharge. She has never been sexually active.

### Examination

On examination she has an increased body mass index (BMI) of 29 kg/m<sup>2</sup>. The blood pressure is 118/70 mmHg. There is excessive hair growth on the lower arms, legs and thighs and in the midline of the abdomen below the umbilicus. There is a small amount of growth on the upper lip too. The abdomen is soft and no masses are palpable. Pelvic examination is not indicated as she has not been sexually active.

### INVESTIGATIONS

		<i>Normal range</i>
Follicle-stimulating hormone (FSH)	7 IU/L	Day 2–5 1–11 IU/L
Luteinizing hormone (LH)	12 IU/L	Day 2–5 0.5–14.5 IU/L
Prolactin	780 mu/L	90–520 mu/L
Testosterone	3.2 nmol/L	0.8–3.1 nmol/L
Thyroid-stimulating hormone	4.9 mu/L	0.5–5.7 mu/L
Free thyroxine	14.7 pmol/L	10–40 pmol/L

### Questions

- What is the likely diagnosis?
- How would you further investigate and manage this woman?

## ANSWER 11

The likely diagnosis is of polycystic ovarian syndrome (PCOS). This is supported by the clinical features of hirsutism, acne, increased BMI and slight menstrual irregularity. The biochemical results show the typical moderately raised androgen and raised LH:FSH ratio.

If the testosterone level was higher, androgen-secreting tumours should be considered (androgen-secreting ovarian, pituitary or adrenal tumours).

Other causes of hyperandrogenism include iatrogenic (glucocorticoids, danazol, testosterone), idiopathic or familial.

### Further investigation

A transabdominal ultrasound scan should be arranged to confirm the ultrasound features of polycystic ovaries, although this is not in fact an essential feature for the diagnosis of the syndrome.

### Treatment

Various treatments are used for hirsutism once serious causes of hyperandrogenism have been excluded. One of the commonest is to commence the cyproterone acetate-containing combined oral contraceptive pill (co-cyprindiol). Cyproterone acetate is an anti androgen with progestogenic activity. It takes several months for an improvement to be seen in the hair growth and she would continue to need to use the cosmetic treatments in the meantime.

If this is ineffective then cyproterone acetate at a higher dose can be used either alone or in addition to co-cyprindiol.

General advice should include weight loss, as this counteracts the metabolic imbalance associated with PCOS and is favourable in the long term in terms of the known cardiovascular risks associated with hyperandrogenism.

### KEY POINTS

- Most women with hirsutism have PCOS or a familial tendency.
- Androgen-secreting tumours should be excluded in women with testosterone level above 5 nmol/L.
- Hirsutism has significant psychosocial consequences.

## CASE 12: PAIN AND THE INTRAUTERINE SYSTEM

### History

A 30-year-old woman had a levonorgestrel-releasing intrauterine system (IUS) inserted by her general practitioner 3 weeks ago. Ten days ago she presented to the emergency department with abdominal pain, and on examination the threads were not visible and ultrasound scan suggested the IUS was misplaced in the right uterine cornu. An appointment was made for hysteroscopic resection but she has presented again in the interim with further pain.

### Examination

The abdomen is not distended and is soft. There is generalized lower abdominal tenderness. The threads cannot be visualized on speculum examination.

## INVESTIGATIONS

Transvaginal ultrasound report: the uterus is anteverted and of normal size. The endometrium is regular and measures 11 mm. An IUS is not visible. Both ovaries appear normal in size and morphology.

Abdominal X-ray is shown in Fig. 12.1.



**Figure 12.1** Abdominal X-ray.

### Questions

- How would you explain the symptoms and investigation findings?
- How would you further investigate and manage this patient?

### ANSWER 12

The plain X-ray shows the IUS in the pelvis but it is lying at a transverse angle in the right pelvis. In this high and lateral location and at this orientation it is highly unlikely that the device is within the uterus, especially as the ultrasound report suggests a normal sized uterus. The current ultrasound result confirms that the uterus is empty. However the previous report suggested the device was at the uterine cornu. It can be concluded therefore that the device was inserted into the uterus but it has subsequently migrated through the myometrium into the peritoneal cavity. We have no evidence to determine whether or not it was originally placed in the correct position at the fundus.

### **! Complications of intrauterine contraceptive device (IUCD)/ intrauterine device insertion**

- Uterine perforation
- Device migration through to peritoneal cavity
- Pelvic inflammatory disease
- Expulsion of device (commonly with the next period)

### Investigation

The only important investigation is a pregnancy test, as the woman is potentially pregnant since the IUS may not have been effective if it was never in the correct location.

### Management

The IUS needs to be retrieved. While it was in the uterus this could have been performed with outpatient hysteroscopic retrieval. However now a laparoscopy is indicated.

In this case the laparoscopy revealed blood-stained free fluid in the pouch of Douglas, with scarring on the right fundal area of the uterus. The IUS was found covered with omentum in the right lower abdomen. It was easily removed laparoscopically.

As the woman had wanted the IUS for contraception as well as treatment of her menorrhagia, and as the uterus appeared to have healed, a new IUS was inserted under laparoscopic guidance at the time. Antibiotics were given to prevent infection.

Once an IUS or IUCD has been inserted, women should be advised to have their GP check the threads are still visible after the first period. Thereafter most women are willing and able to check the threads themselves.

### KEY POINTS

- The differential diagnosis of lost IUS threads is perforation and migration of the device, expulsion or misplacement of the device within the uterine cavity.
- Appropriate location at the fundus is essential for full contraceptive efficacy.
- Women with a 'lost IUCD' should use alternative contraception.

## CASE 13: BLEEDING IN PREGNANCY

### History

A 19-year-old woman presents at 13 weeks' gestation with vaginal bleeding and a smelly watery discharge. She feels generally unwell and has had fevers for the last 48 h. She initially thought she had gastroenteritis as she had reduced appetite, abdominal pain, vomiting and loose stools. All her booking bloods were normal and the 11-week 'nuchal' scan was reassuring. She had a previous normal vaginal delivery at 38 weeks' gestation. She has no significant gynaecological or general medical history.

### Examination

On examination the temperature is 38.1°C, pulse 96/min and blood pressure 110/68 mmHg. She looks flushed and her peripheries are warm. Chest and cardiac examination are normal. She is tender over the uterus, which feels approximately 14 weeks' size. There is no guarding or rebound. On speculum examination the cervical os is closed but an offensive bloodstained discharge is seen. Bimanual examination reveals a very tender and hot uterus that also feels 'boggy'. No adnexal masses are palpable but bilateral adnexal tenderness is evident.

### INVESTIGATIONS

		<i>Normal range for pregnancy</i>
Haemoglobin	10.4 g/dL	11–14 g/dL
White cell count	$24.1 \times 10^9/L$	$6-16 \times 10^9/L$
Neutrophils	$18 \times 10^9/L$	$2.5-7 \times 10^9/L$
Platelets	$556 \times 10^9/L$	$150-400 \times 10^9/L$
Sodium	135 mmol/L	130–140 mmol/L
Potassium	3.4 mmol/L	3.3–4.1 mmol/L
Urea	6 mmol/L	2.4–4.3 mmol/L
Creatinine	80 mmol/L	34–82 mmol/L
C-reactive protein	127 mg/L	<5 mg/L

The transvaginal ultrasound is shown in **Fig. 13.1**.

Transvaginal ultrasound report: single intrauterine gestational sac, fetus present with crown–rump length 42.7 mm, fetal heart beat absent.



**Figure 13.1** Transvaginal ultrasound scan showing a mid sagittal view of the uterus.

### Questions

- What is the diagnosis?
- Why is this presentation relatively uncommon in current clinical practice?
- How would you further investigate and manage this woman?

### ANSWER 13

The woman is pregnant with a dead fetus and signs of sepsis. This is referred to as a septic miscarriage. This used to be a common diagnosis due to the high incidence of illegal terminations performed by unqualified people without appropriate sterile technique, instruments or anaesthesia. Since the 1967 Abortion Act, morbidity and mortality from septic miscarriage has fallen dramatically but it remains a cause of maternal mortality, often because it is not recognized early enough. It should therefore be recognized promptly and treated aggressively.

Further investigations necessary are: blood cultures; liver function tests; coagulation screen, group and save; high vaginal and endocervical swabs.

COMPLICATIONS OF SEPTIC MISCARRIAGE
<ul style="list-style-type: none"> <li>• Massive haemorrhage</li> <li>• Hysterectomy</li> <li>• Disseminated intravascular coagulopathy</li> <li>• Multisystem failure (secondary to haemorrhage or sepsis)</li> <li>• Death</li> </ul>



### Management

- The woman should be admitted and commenced on broad-spectrum intravenous antibiotics pending culture and sensitivity.
- Aggressive intravenous fluids should be given as she has intravascular depletion due to sepsis (vasodilatation) and vomiting.
- Surgical evacuation of the uterus should be arranged urgently, once the first dose of antibiotics has been given.
- A senior gynaecologist should be involved as the risks of uterine perforation or of massive haemorrhage are significant in the presence of sepsis.
- A urinary catheter should be inserted to monitor renal function.
- The woman may need transfer to the intensive care unit depending on her cardiovascular, respiratory and haematological state.

## KEY POINTS

- Septic miscarriage is rare since the legalization of termination of pregnancy.
- It should be recognized promptly and treated aggressively due to the risk of rapid deterioration and mortality.
- Complete evacuation of the uterus is essential to eliminate the focus of infection.

## CASE 14: PELVIC PAIN

### History

A 27-year-old woman complains of left iliac fossa pain. The pain started while she was asleep the night before last and she says it woke her suddenly. Initially the pain was constant and severe and she was unable to get out of bed for a few hours. She felt nauseated and did not eat anything all day yesterday. There was no associated bleeding or discharge and there are no bowel or urinary symptoms. Today the pain is still present but much improved and she has been able to have breakfast.

She has had similar episodes twice in the past but they were not as severe or long lasting. She had never been pregnant and uses the progesterone only pill (POP) for contraception. She has been with her partner for 3 years and has not had any previous sexually transmitted infections. There is no other medical history of note.

### Examination

The temperature is 37.1°C, heart rate 76/min and blood pressure 122/70 mmHg. The abdomen is slightly distended and tender in the suprapubic and left iliac fossa regions with some rebound tenderness but no guarding. No masses are palpable. Speculum examination is normal and she is tender in the left adnexa on bimanual examination, but no cervical excitation or masses are evident.

## INVESTIGATIONS

		<i>Normal range</i>
Haemoglobin	12.3 g/dL	11.7–15.7 g/dL
White cell count	$7.1 \times 10^9/L$	$3.5\text{--}11 \times 10^9/L$
Platelets	$402 \times 10^9/L$	$150\text{--}440 \times 10^9/L$
C-reactive protein	2.5 mg/L	<5 mg/L
Urinary pregnancy test: negative		
Urinalysis: Protein: trace		
Blood: negative		
Leucocytes: negative		
Nitrites: negative		
Transvaginal ultrasound report: the uterus is anteverted and normal size. The endometrium is thin and measures 3.1 mm. Both ovaries appear normal. There is a moderate amount of anechoic free fluid in the pouch of Douglas, measuring 30 × 26 × 15 mm.		

### Questions

- What is the differential diagnosis?
- How would you manage this patient?

## ANSWER 14

The sudden onset of left iliac pain suggests rupture, haemorrhage or torsion of an ovarian cyst. In cases of torsion of the ovary this would normally result in vomiting and systemic upset, whereas

this woman's condition has in fact improved. In addition, an adnexal mass would be visible on ultrasound. Haemorrhage into a cyst would be seen on transvaginal ultrasound scan as an echogenic ovarian enlargement.

If a cyst ruptures then it is common for the ovary to appear ultrasonographically normal afterwards but the finding of free fluid in the pouch of Douglas suggests this pathology.

Thus the diagnosis is likely to be a ruptured ovarian cyst. Alternative diagnoses may include irritable bowel syndrome or possibly renal colic, though urinalysis does not show haematuria.

### Management

The patient is already improving and the free fluid which is causing the peritoneal irritation (and the rebound tenderness) is expected to resolve spontaneously. Therefore immediate management is supportive with analgesia.

In the longer term, the woman should be advised to use a different contraceptive as the POP is known to be associated with an increased incidence of ovarian cysts and it seems from the history that this is the third episode for this woman.

### KEY POINTS

- The only ultrasound evidence of ovarian cyst rupture may be the presence of free peritoneal fluid.
- Ovarian cyst rupture should be managed expectantly.
- An increased incidence of ovarian cysts is found in women using the progesterone only pill, whereas the combined oral contraceptive pill reduces cyst occurrence by inhibiting ovulation.

## CASE 15: VULVAL SWELLING

### History

A 17-year-old girl presents with a vulval swelling. She noticed a lump a few weeks earlier and in the last 2 days it has enlarged and become painful. She cannot walk normally and has not been able to wear her normal jeans because of the discomfort. She feels well in herself however. She has been sexually active since the age of 14 years and uses the depot progestogen injection for contraception and therefore does not have periods.

She has been with her boyfriend for 8 months and on direct questioning reports unprotected intercourse with two other boys in that time. She had a sexual health screen in a genitourinary clinic 1 year ago and the result was normal. There is no other medical history of note and she takes no medication.

### Examination

The temperature is 37.7°C, heart rate 68/min and blood pressure normal. Abdominal examination is normal. There is a left-sided posterior labial swelling extending anteriorly from the level of the introitus, measuring 6 × 4 × 4 cm. It appears red, fluctuant, tense and is exquisitely tender to touch. Left-sided tender inguinal lymph nodes are noted.

### Questions

- What is the diagnosis?
- How would you manage this patient?

### ANSWER 15

The diagnosis is of a Bartholin's abscess. The Bartholin's glands are located in the posterior vulva and the gland ducts open into the lower vagina to maintain a moist vaginal surface, important

during intercourse. Obstruction to a duct by inflammation (from friction during intercourse) or infection causes a cyst to develop, which commonly becomes infected. Usually mixed flora is found but in 20 per cent of cases gonorrhoea is isolated.

The diagnosis is clinical and it is important to differentiate a Bartholin's cyst from the differential diagnosis of a sebaceous cyst, vaginal wall cyst or perianal abscess.

### Management

The abscess must be drained, traditionally by formal incision and drainage, with the edges of the cyst capsule sutured to the skin to prevent reclosure of the duct (marsupialization).

Increasingly commonly to avoid general anaesthetic, an inflatable balloon catheter ('Word catheter') is inserted into the abscess (or cyst) under local anesthetic to drain the fluid. This is left for 4 weeks, to allow epithelialization and a long-term drainage route for the gland, thus hopefully reducing the chance of recurrence of the abscess.

In this case the girl has had several recent partners and a general sexually transmitted infection screen should be arranged after drainage of the cyst, with general sexual health advice.

In most cases antibiotics are not needed after drainage unless there is significant surrounding erythema, systemic signs of sepsis, inguinal lymphadenopathy (as in this case) or gonococcus is found in the culture of the drained fluid.

### KEY POINTS

- Bartholin's abscesses are relatively common and cause acute painful unilateral vulval swelling.
- Drainage of the abscess and marsupialization of the skin edges are the mainstay of treatment but recurrence is still common.
- Pus should always be sent for culture as gonorrhoea is isolated from up to 20 per cent of Bartholin's abscesses.

## CASE 16: ABDOMINAL PAIN

### History

A 26-year-old woman presents with abdominal pain. It started suddenly 2 hours ago and was initially in the lower abdomen but is now generalized. She feels nauseated and dizzy, especially when she sits up. She also feels as if she has bruised her shoulder. She has not noticed any vaginal bleeding or discharge, and there are no bowel or urinary symptoms.

She does not keep a record of her period dates but thinks the last one was about a month ago. She has a regular partner and says that they often forget to use a condom.

She had a termination 3 years ago. She was diagnosed with chlamydia when she was admitted to hospital at the age of 19 years with a pelvic infection.

There is no other medical history of note.

### Examination

On examination she is pale and looks unwell. She is intermittently drowsy. She is lying flat and still on the bed. The temperature is 35.9°C, pulse 120/min and blood pressure 95/50 mmHg. Peripherally she is cool and the hands are clammy. She is generally slim but the abdomen is symmetrically distended. There is generalized tenderness on light palpation, with rebound tenderness and guarding. There are no obviously palpable masses and vaginal examination has not been carried out.

<b>INVESTIGATIONS</b>		
		<i>Normal range</i>
Haemoglobin	9.6 g/dL	11.7–15.7 g/dL
Mean cell volume	87 fL	80–99 fL
White cell count	$7.1 \times 10^9/L$	$3.5\text{--}11 \times 10^9/L$
Platelets	$204 \times 10^9/L$	$150\text{--}440 \times 10^9/L$
Sodium	132 mmol/L	135–145 mmol/L
Potassium	6.0 mmol/L	3.5–5 mmol/L
Urea	6 mmol/L	2.5–6.7 mmol/L
Creatinine	70 mmol/L	70–120 mmol/L
Urinary pregnancy test: positive		

### Questions

- What is the likely diagnosis?
- How would you manage the patient?

### ANSWER 16

Any woman who is unwell with abdominal pain should be assumed to have a ruptured ectopic pregnancy. In this case there are risk factors and the symptoms of dizziness,

nausea, severe abdominal pain and shoulder pain are classical of haemoperitoneum. The examination findings of cool and clammy peripheries, a distended abdomen, tachycardia and hypotension also suggest the clinical diagnosis and a positive pregnancy test confirms this.

Young women tend to compensate for hypovolaemia, and the fact that this woman is now cool and clammy with hypotension suggests that she is gravely unwell and should be transferred for definitive management without delay.

Although the haemoglobin does not seem dramatically reduced, it is likely that on repeat testing it may now be extremely low.

### Management

The anaesthetist, theatre staff and senior gynaecologist should be alerted immediately and the woman transferred to theatre for surgery. An ultrasound is not necessary and would increase the threat to this woman by increasing the delay in reaching theatre. Depending on the haemodynamic status at the time, and on discussion with the anaesthetist, laparoscopy could be considered assuming that the surgeon is very experienced and confident that they can quickly identify and secure a ruptured tube. Alternatively, in an unstable patient laparotomy may still be indicated.

Assuming the diagnosis of tubal rupture was confirmed, then salpingectomy would be essential (rather than salpingotomy).

<b>! Key Initial Management for Suspected Ruptured Ectopic Pregnancy</b>
<ul style="list-style-type: none"> <li>• Facial oxygen</li> <li>• Lie flat with head down</li> <li>• Two large-bore cannulae with 2 L of intravenous fluids given immediately</li> <li>• Crossmatch 4 units (and alert haematologist to the haemorrhage)</li> <li>• Consent for laparoscopy/laparotomy and salpingectomy</li> <li>• Transfer to theatre for salpingectomy.</li> </ul>

Ruptured ectopic pregnancy is still the leading cause of maternal death in early pregnancy, and doctors must be alert to the occasional presentation with life-threatening haemorrhage, as in this case.

### KEY POINTS

- Ectopic pregnancy is still a significant cause of early pregnancy maternal death.
- Any woman of reproductive age who is unwell with abdominal pain and a positive pregnancy test should be assumed to have a ruptured ectopic pregnancy.
- Preoperative ultrasound is not indicated if ectopic rupture is suspected.

## CASE 17: URINARY RETENTION

### History

A 29-year-old woman presents to the emergency department having been unable to pass urine for 8 h. For the last 3 days she has been feeling unwell with a fever, shivering and a reduced appetite. She has pain in her groins specifically but says that her whole body aches. Yesterday she began to feel pain on passing urine, and today this has become very severe such that now she cannot micturate at all. She has never experienced any episodes like this before. She has no previous medical or gynaecology history and has regular menstrual cycles. She recently ended a long-term relationship and has been with a new partner for a few months, with whom she uses condoms.

### Examination

The woman is obviously in significant discomfort. Her temperature is 37.4°C, heart rate 102/ min and blood pressure 118/80 mmHg. Bilateral tender inguinal lymphadenopathy is noted and axillary lymph nodes are also palpable. The bladder is palpable midway to the umbilicus. The vulva is generally reddened and there is a cluster of ulcerated lesions of approximately 2–5 mm on the left side of the labia minora. Speculum examination shows the cervix is inflamed with a profuse exudate.

### INVESTIGATIONS

		<i>Normal range</i>
Haemoglobin	12.7 g/dL	11.7–15.7 g/dL
White cell count	$12 \times 10^9/L$	$3.5\text{--}11 \times 10^9/L$
Neutrophils	$3.2 \times 10^9/L$	$2\text{--}7.5 \times 10^9/L$
Lymphocytes	$9 \times 10^9/L$	$1.3\text{--}3.5 \times 10^9/L$
Platelets	$272 \times 10^9/L$	$150\text{--}440 \times 10^9/L$

### Questions

- What is the diagnosis?
- How would you further investigate and manage this patient?

### ANSWER 17

The woman is demonstrating a classic presentation of primary herpes simplex virus infection. Prodromal 'flu type symptoms and generalized lymphadenopathy usually occur most significantly with primary infection, and any subsequent attacks are more likely to present with vulval soreness as the only noticeable feature.

### **! Herpes simplex features**

- Primary infection:
  - general malaise
  - fever • anorexia
  - lymphadenopathy
  - genital blisters
  - urinary retention
- Recurrent (secondary) infection:
  - genital blisters
  - often occurs at times of stress or tiredness

The woman probably acquired the infection from her new partner – condoms do not effectively prevent spread as the organism can spread from the perineum. In this case there is also evidence of herpes cervicitis from spread of virus particles into the vagina.

### **Further investigation**

Vulval viral swab should be sent to confirm the diagnosis. This requires firm rubbing of the swab onto an ulcer and is very painful, but as the diagnosis has such profound social implications, confirmation of the diagnosis is imperative.

### **Management**

#### *Immediate management:*

- The woman should have an indwelling (preferably suprapubic) urinary catheter inserted immediately and be given analgesia and paracetamol.
- Local anaesthetic gel often relieves the pain and can be used until symptoms settle.
- Oral aciclovir started within 24 h of an attack reduces the severity and duration of the episode.

#### *Further management:*

- Referral to a health counsellor should be made to discuss the diagnosis and its implications.
- Some women have many recurrent attacks, whereas others never experience a further episode. For recurrent attacks aciclovir may be given again if commenced within 24 h of becoming unwell.

### **KEY POINTS**

- Genital herpes simplex infection has a major psychosexual and social impact on sufferers.
- The first attack is generally severe and associated with primarily systemic features.
- Recurrent episodes may be hardly noticed; transmission may occur prior to the appearance of blisters and condoms do not prevent spread of disease and so it is difficult to limit.
- Aciclovir does not cure the disease but is effective at reducing the duration and severity of an episode.

## **CASE 18: ABDOMINAL PAIN**

History A 14-year-old girl presents with lower abdominal pain which developed suddenly a day ago. The pain is over the whole lower abdomen but worse on the right. It was intermittent at first but is now constant and very severe. She feels unwell in herself with no appetite and vomiting.

She now feels sweaty as well. She says her bowels opened normally the day before and they are normally regular.

She has had no previous episodes of pain like this. Her last menstrual period started 2 weeks ago and she has a slightly irregular cycle. She has never had any gynaecological or other medical problems in the past.

### Examination

On examination she looks in pain and seems to find it difficult to get comfortable. Her temperature is 37.9°C, pulse 112/min and blood pressure 116/74 mmHg. She feels warm and well perfused. The abdomen is distended symmetrically with generalized tenderness, maximal in the right iliac fossa region. There is rebound and guarding in the right iliac fossa.

INVESTIGATIONS		
		<i>Normal range</i>
Haemoglobin	13.8 g/dL	11.7–15.7 g/dL
White cell count	$14.2 \times 10^9/L$	$3.5\text{--}11 \times 10^9/L$
Platelets	$390 \times 10^9/L$	$150\text{--}440 \times 10^9/L$
C-reactive protein	55 mg/L	<5 mg/L

### Questions

- What is the differential diagnosis?
- How would you investigate and manage this girl?

### ANSWER 18

The differential diagnosis of right iliac fossa pain in this case is:

- gynaecological:
  - adnexal/ovarian cyst torsion
  - ovarian cyst rupture
  - ovarian cyst haemorrhage
- ectopic pregnancy
- surgical:
  - appendicitis
- urinary:
  - urinary tract infection
- renal colic

The girl is acutely systemically unwell with an acute abdomen which would favour the diagnosis of torsion or possibly ruptured appendix. Cyst rupture and haemorrhage are not commonly associated with such systemic disturbance, though this is an important differential diagnosis.

Further investigation would include a pregnancy test to exclude pregnancy, and urinalysis to exclude urinary tract infection or renal colic. An ultrasound should be arranged (transabdominal) to assess for an ovarian cyst or for an inflamed appendix. The ultrasound appearances of adnexal torsion are variable, but there is invariably a unilaterally enlarged oedematous ovary, commonly with a visible cyst or haemorrhage within the ovary. If an adnexal mass is confirmed, laparoscopy should be performed as soon as possible since adnexal torsion is associated with loss of the ovarian function if ischaemia is prolonged and necrosis occurs. Ovarian torsion should be managed with

detorsion (ideally laparoscopically), with consideration of fixing the ovary to the uterus or pelvic side wall to reduce the chance of recurrent torsion. Only if the ovary is gangrenous is salpingoophorectomy indicated.

If the diagnosis is not clear between appendicitis and ovarian torsion then joint laparoscopy with the surgical team is an appropriate approach.

### KEY POINTS

- Suspected ovarian torsion is a gynaecological emergency.
- Torsion is relatively common in young girls and teenagers.
- Ultrasound is useful in detection of an adnexal mass but torsion is a clinically suspected diagnosis and necessitates urgent laparoscopy.

## CASE 19: ABDOMINAL PAIN

### History

A 24-year-old student is referred to the gynaecologist on call from the emergency department with sudden onset of left iliac fossa pain which woke her at 2 am. She fell asleep again but since 8 am the pain has been constant and is not relieved by ibuprofen or codydramol.

Her last period started 2 weeks ago and she reports no irregular bleeding or discharge. She has no significant gynaecological history except for a termination of pregnancy at age 17 years. She has been with her current boyfriend for 2 years and has used the combined oral contraceptive pill (COCP) throughout that time. She says she has not had intercourse for the last 4 months because her boyfriend has been travelling, but says that intercourse has never been painful.

On direct questioning she has felt nauseated but has not vomited. She has had no urinary symptoms but has opened her bowels several times each day for the last 3 days, which is unusual for her.

### Examination

On examination she is afebrile, her observations are normal and her abdomen is soft with vague left iliac fossa tenderness but no signs of peritonism. Bimanual examination reveals a normal-sized uterus with no adnexal tenderness or cervical excitation and no obvious adnexal masses.

### INVESTIGATIONS

		<i>Normal range</i>
Haemoglobin	12.8 g/dL	11.7–15.7 g/dL
Mean cell volume	85 fL	80–99 fL
White cell count	$6.4 \times 10^9/L$	$3.5–11 \times 10^9/L$
Platelets	$178 \times 10^9/L$	$150–440 \times 10^9/L$
Sodium	142 mmol/L	135–145 mmol/L
Potassium	3.8 mmol/L	3.5–5 mmol/L
Urea	5.0 mmol/L	2.5–6.7 mmol/L
Creatinine	72 mmol/L	70–120 mmol/L
C-reactive protein	95 mg/L	<5 mg/L

### Questions

- What is the first investigation you would like to perform?
- What is your differential diagnosis if this test is negative, and how would you rule out some of these diagnoses?

## ANSWER 19

Any woman of reproductive age with abdominal pain should always have a urinary pregnancy test, regardless of the date of her last menstrual period. In this case the test is negative.

The remaining differential diagnoses include:

- ovarian cyst
- pelvic inflammatory disease
- urinary tract infection or stone
- bowel-related cause.

There are no specific gynaecological symptoms or adnexal tenderness, which implies that the pain is not gynaecological in origin. However during speculum examination it is prudent to send swabs for chlamydial and gonorrhoeal infection opportunistically, in view of the high background prevalence of sexually transmitted infection, especially in the 18–25-year-old age group.

Ovulation pain (mittelschmerz) or a corpus luteal cyst are very unlikely as the COCP inhibits the ovulatory cycle. However a transvaginal ultrasound scan will rule out an ovarian cyst for certain.

Urine should be analysed for blood to rule out a renal stone, and for leucocytes and nitrites to rule out infection.

Bowel habit is altered and the raised C-reactive protein suggests an inflammatory condition. As the onset is acute and not severe, the diagnosis is likely to be gastroenteritis. This should be managed expectantly, with fluids, rest and simple analgesia. A stool culture should be sent if the symptoms fail to resolve. Other inflammatory bowel conditions such as Crohn's disease and ulcerative colitis are rare causes to consider if the symptoms are persistent or recurrent.

Irritable bowel syndrome is not associated with raised inflammatory markers, and is therefore not a differential diagnosis in this case.

### KEY POINTS

- Gynaecological, urinary and bowel-related pathology can all be associated with lower abdominal pain.
- A thorough and focused history is always important in making a correct diagnosis.

## CASE 20: ABDOMINAL PAIN AND VAGINAL DISCHARGE

### History

A 46-year-old Indian woman presents with a month-long history of increasing abdominal pain and a green/yellow vaginal discharge. For the last few days she had been feeling feverish and unwell. The pain is across the lower abdomen but worse on the left. She has no urinary symptoms and has been opening her bowels normally. She has a reduced appetite and mild nausea but has not vomited. She has had two vaginal deliveries in the past and no other pregnancies.

She had a laparotomy about 4 years ago for drainage of a pelvic abscess. Recently she has been under the care of a gynaecologist for heavy and prolonged periods, for which she is taking cyclical norethisterone. There is no other medical or surgical history of note.

### Examination

The temperature is 37.8°C, pulse 95/min and blood pressure is 136/76 mmHg. The abdomen appears slightly distended and a mass is palpated arising from the pelvis on the left. There is focal tenderness in the left iliac fossa without rebound tenderness or guarding. Speculum examination

reveals no discharge or blood, and the cervix appears normal. Cervical excitation and bilateral adnexal tenderness are noted, more marked on the left.

<b>INVESTIGATIONS</b>		
		<i>Normal range</i>
Haemoglobin	10.3 g/dL	11.7–15.7 g/dL
Mean cell volume	91 fL	80–99 fL
White cell count	$13.8 \times 10^9/L$	$3.5–11 \times 10^9/L$
Neutrophils	$8.9 \times 10^9/L$	$2–7.5 \times 10^9/L$
Platelets	$521 \times 10^9/L$	$150–440 \times 10^9/L$
C-reactive protein	157 mg/L	<5 mg/L

Transvaginal ultrasound scan report: ultrasound scan shows a uterus with multiple fibroids. The right ovary appears normal. The left ovary cannot be identified separately from a complex adnexal mass, measuring  $7 \times 6 \times 4$  cm (Fig. 20.1).



**Figure 20.1** Transvaginal ultrasound scan showing the transverse view through the left adnexa.

### Questions

- What is the differential diagnosis?
- Why is she anaemic?
- How would you further investigate and manage this patient?

### ANSWER 20

The woman is acutely unwell with pyrexia, tachycardia, raised inflammatory markers, neutrophilia and reactive thrombocytosis. This suggests an infective process and the left iliac fossa mass detected on ultrasound would appear to be the cause. The likely diagnosis is a tubo-ovarian mass, probably an abscess.

Alternatively this could potentially be a diverticular abscess or, if it were on the right, an appendix abscess. Ovarian malignancy or another cause of a complex adnexal mass would be unlikely to present with this acute inflammatory episode.

Anaemia in this woman could be due to chronic menorrhagia or anaemia of chronic disease. The increased mean cell volume suggests the latter, but ferritin and folate levels would be useful to see whether there is in fact a degree of iron deficiency too.

### Further investigation

Blood cultures and vaginal and endocervical swabs should be taken. Ferritin and folate should be checked.

## Management

The woman should be admitted for intravenous antibiotics. Broad-spectrum cover should be given including agents against anaerobes and chlamydia. In cases of pelvic inflammatory disease (PID) there is commonly a mixed growth of anaerobes on top of a previous chlamydial infection. If improvement does not occur within 24–48 h, or the diagnosis is unclear, then laparoscopy or laparotomy should be performed to confirm the diagnosis and drain the abscess surgically.

### **! Advice to patients with pelvic inflammatory disease**

- The diagnosis (of PID) suggests the likelihood of a sexually transmitted infection either acutely or in the past.
- The partner needs to be screened and treated.
- The couple should avoid intercourse (or use condoms) until both have completed treatment.

### **KEY POINTS**

- It is common for no organism to be cultured in women with PID.
- A woman with a pelvic abscess due to PID may be given a trial of conservative treatment prior to surgical drainage.
- Contact tracing is an important part of the management of PID to prevent reinfection and further spread of infection.

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