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Gynaecological Surgery and Oncology

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Part 1. Gynaecological surgery

Introduction

This chapter will discuss what can go wrong during gynaecological surgery, why complications occur, how to reduce the risk, and how to deal with the problems that arise. Complications associated with endoscopy, surgical sterilization, abortion and urogynaecology are all dealt with elsewhere. This chapter will consider open laparotomy and major vaginal surgery.

Not only are the depths of the female pelvis a considerable distance from the abdominal wound through which the gynaecological surgeon operates but it is also one of the more congested parts of the human body, where the urinary tract, the intestinal tract and the genital tract all jostle together to reach the outside world. Each brings its own luxuriant blood supply to which are added the large vessels that supply the legs and the buttocks. Hard against the pelvic sidewall, seldom seen by most gynaecologists, are the lumbo-sacral nerves and their many branches. Running alongside the structural supports of the pelvis is the autonomic nerve supply to bowel and bladder. A veritable minefield for the unwary or the unfortunate. As if this were not enough, the pelvic veins are both bereft of valves to prevent back flow from the huge vena cava and are notorious for their anatomical inconsistency. Add to this the distortion of disease or previous surgery and the stage is set for challenging surgery where even the most careful and experienced may encounter desperate situations.

Pre-operative preparation

Explanation and consent

It is fundamental that the patient should have as clear an understanding as possible about the procedure she is about to undergo so that she may give her consent in the full knowledge of what the risks may be. No surgeon wants to frighten his patient unduly – especially if surgery is unavoidable and the serious risks are rare. One view is that the patient with cancer has more than enough to worry about without being given a detailed account of all the possible complications. Telling her all about what might go wrong puts the surgeon ‘in the clear’ but increases to almost intolerable levels the patient’s fear. On the other hand, most patients are aware that operations can go wrong and find it helpful to have a discussion about the potential hazards that puts these into perspective. It is useful to talk about the following: the problems that are

likely to arise; the complications that might happen; and those that are unlikely. Ideally, each discussion should be documented, although some conversations take place when the notes are not available. The main purpose of the documentation is to ensure that other members of the team know what has already been discussed.

If consent is conditional, the terms of these conditions need to be written down to avoid future misunderstandings. The surgeon also must make clear what will *not* be done at this procedure – even if it seems obvious that a second laparotomy will be required. The exception to this is when the surgery is urgent and lifesaving. Resection of damaged bowel should obviously be undertaken but anterior resection for diverticulosis should not. Removal of malignant ovaries might be correct practice if the surgeon involved is qualified to do so but removal without consent of ovaries apparently affected by endometriosis would not.

Identify factors that alter risk

Previous pelvic surgery can turn a routine operation into a nightmare. A careful history of surgical intervention will alert the gynaecologist to possible problems. The bladder may be firmly adherent to the uterus after a Caesarean section and loops of bowel may be fastened firmly in the pelvis after an appendicectomy.

Medical problems will all require careful assessment and consultation with the relevant medical specialist. This is not the place for a litany of the disorders that can impinge upon the safety of pelvic surgery, but some examples may serve to illustrate the importance of this point. Diabetic women seldom have problems if their glucose control is good and kept within acceptable levels after the operation but wound infection and poor healing will result if control is inadequate. Rarely, the highly fatal necrotizing fasciitis may supervene with terrifying suddenness.¹ Patients with Systemic Lupus Erythematosus may have a severe vasculitis that makes them more prone to haemorrhage and impairs wound healing. Their immunosuppressive treatment will make them more susceptible to infection. Neurological assessment of the patient with multiple sclerosis or assessment of joint mobility in the patient with rheumatoid arthritis is of particular importance if leg stirrups are to be employed. Whatever the medical problem, complications may be avoided most readily by close collaboration with the physicians who normally look after her.

Obesity is an increasingly common risk factor. This not only makes the operation technically more difficult but increases the risk of postoperative respiratory insufficiency and of thromboembolic disease. Pelvic haematoma, wound infection and dehiscence are all more common in the obese patient.

Many patients are taking drugs that impair their fitness for surgery. The most commonest of these is tobacco. This will affect the patient's lungs and substantially increase the risk of postoperative chest infection, which will impair mobility and heighten the risk of thromboembolic disease. Coughing will add to the risk of wound disruption. Corticosteroids such as prednisolone make infection and poor wound healing more likely. Women taking the oral contraceptive pill or hormone replacement therapy have a slightly greater risk of thromboembolic disease but there is no need to ask them to stop these unless there is some other risk factor.²

Prepare the patient for surgery

Thromboembolic disease is one of the main causes of death after major surgery.³ This is particularly true for women undergoing surgery for cancer, partly because these women often have an increased tendency to thrombosis, partly because the surgery is more prolonged and partly because the tumour may compress the pelvic veins, causing an undetected preoperative clot. This clot can detach when the tumour is removed and migrate to the lung, causing a pulmonary embolism. These risks can be mitigated substantially by the correct use of anti-embolism stockings and low-dose heparin.⁴ If the patient has a relatively recent thrombus in the leg or pelvic veins, a filter may be placed in the inferior vena cava percutaneously via the neck veins before the operation. If it is judged safe to do so, some of these filters can be removed a few days later before they have become embedded in the vein walls.

Prophylactic antibiotics remain relatively controversial prior to routine abdominal hysterectomy but are probably beneficial in vaginal hysterectomy and in complex abdominal hysterectomy.⁵ In most cases, a single dose of antibiotics is as effective as multiple-dose regimens.

Bowel preparation is not strictly necessary for most gynaecological surgery but a disposable enema or suppositories the night before surgery will ensure that the rectum is empty and does not limit access to the pelvis. The women will also be more comfortable in the first couple of days after her operation.

Pre-operative physiotherapy is very valuable for patients with respiratory problems. It ensures that their chest is as clear as possible before the operation and teaches them the exercises they will need to perform after surgery. In the same vein, smokers should always be advised to stop smoking and the overweight encouraged to lose weight. Unfortunately, this advice usually falls on deaf ears.

Intra-operative management

The route

The provisional decision whether to use an abdominal or a vaginal approach for hysterectomy should be made before theatre but the final assessment of suitability for vaginal hysterectomy is performed under anaesthesia. Each surgeon has personal criteria for attempting vaginal hysterectomy that are based upon training and experience. While some advocate the vaginal removal of large fibroid uteri, most gynaecologists adopt a more cautious approach. Some also describe the removal of the ovaries with or without the Fallopian tubes by a vaginal approach but this requires both special training and instruments. In the event of difficulty, the surgeon should not hesitate to change to an abdominal approach.

The incision

The choice and placing of the incision is important in order to provide adequate access. However, vertical wounds heal less well than transverse incisions and are more likely to dehiscence or herniate. A vertical wound that extends into the upper abdomen

will interfere with respiration after the operation. Even in operations for malignant disease, a transverse incision is usually preferable unless access to the abdomen above the pelvic brim is required. My colleagues and I very rarely use a vertical incision when performing a radical hysterectomy for cervical cancer and generally limit its use to women with ovarian cancer or other large masses that could not be removed through a transverse incision.

Ideally, the incision should not be placed in a skin crease that will become a moist sulcus when the patient is sitting up. In benign surgery, it is usual to place the incision about 4 cm cephalad of the symphysis pubis. When more access is required, it is helpful to move the incision a further 2–4 cm cephalad so that the aperture in the abdominal wall becomes more diamond-shaped than triangular. To increase the aperture still further, the rectus muscles may be dislocated from their insertion on the pubic rami. In women with a massive pendulous apron of fat, care is required in the siting of the incision. No attempt should be made to pull the apron back because that is tiring for the assistants and the surgeon and ensures that the incision is placed in moist skin beneath the apron where healing will be slow. Instead, the apron should be left to hang naturally and a transverse incision made through the apron into the abdomen. Care is required to ensure that the incision is placed sufficiently cephalad and directed vertically downward to arrive in the abdominal cavity at an appropriate position. It is usually best to view the patient from the side on the theatre table after she has been anaesthetized and to identify the site of the incision with an indelible marker pen before preparing the skin and positioning the drapes.

Vascular damage

Haemorrhage is the complication that every surgeon fears most. It may result from damage to a large vessel but is often due to bleeding from many small vessels. Reducing the risk of haemorrhage begins with careful, gentle packing of the bowel out of the pelvis. The bowel must be kept out of the pelvis as much as possible but the packs should not compress the inferior vena cava and obstruct the flow of blood out of the pelvis. Excessively tight packing results in distended pelvic veins and excessive venous bleeding. In the same way, a modest head down tilt lowers the venous pressure in the pelvis and reduces blood loss.

Bleeding may occur from the main uterine or ovarian vessels while they are being identified, clamped and ligated. This is especially likely when the anatomy is distorted by pathology or previous surgery. Careful identification of the anatomy and good surgical technique will reduce but not eliminate this risk. The proximity of the ureter to these vessels at the pelvic brim and lateral to the cervix is an added problem. Ligation of the descending vaginal branch of the uterine artery and the accompanying vein can be especially challenging. I use a figure-of-eight suture in the angle of the vagina to ensure that the heel of the pedicle that contains these vessels does not slip out of the ligature. If bleeding from these vessels occurs, it will usually be controlled temporarily with pressure while appropriate instruments and ligatures are readied. The swab can then be removed gradually, exposing more of the field bit by bit until the bleeding point is revealed. Suction may be needed to keep the operative field clear.

The location of the ureter must be determined by palpation or inspection before attending to the bleeding vessel. It is usually best to stop the bleeding by grasping the vessel gently with fine, long-handled artery forceps or with the diathermy dissecting forceps. If the haemorrhage is arrested, the vessel may be permanently sealed with diathermy if it is small enough; alternatively, a ligature or suture will be required.

Damage to the large iliac vessels usually occurs only during surgery for cancer when lymph nodes or tumour are being removed from the surface of the vessels. However, deeply infiltrating endometriosis may become adherent to the internal iliac vessels and any retroperitoneal tumour or postoperative adhesions may distort the anatomy so that the iliac vessels are exposed to trauma. In most cases, tears in the common and external iliac veins can be repaired by suturing with fine vicryl. Damage to the arteries is usually less of a problem because the muscular vessel wall constricts and contains the haemorrhage. Local pressure, sometimes supplemented by sutures, usually gives a very satisfactory result. The real danger comes from damage to the internal iliac veins and their branches, the superior gluteal vein or large ragged tears removing parts of the wall of the external or common iliac veins. The deeply placed veins retract into the muscles on the pelvic sidewall where they become relatively inaccessible. Deeply placed mattress sutures are required to control the haemorrhage. Unfortunately, such sutures may involve one of the large pelvic nerves. This will only become apparent after the operation when the patient wakes up. It may prove impossible to control bleeding from these veins completely. Opinion is divided on the value of ligation of the internal iliac artery in this setting. My own experience is disappointing. Firm packing may prove to be the only alternative.

More common than either of the two dramatic scenarios above but equally dangerous is a steady ooze from many small venules and arterioles. This usually follows an extensive dissection such as may be required to remove an endometrioma, or to mobilize an adherent bladder. This often happens at the end of a long operation during which there has been a slow but steady blood loss which, because it has not been particularly dramatic, has not been fully replaced. A consumptive coagulopathy results as the clotting factors are exhausted. The first step therefore is to hold a hot pack firmly on the bleeding area for 10 minutes. The second is to commence the prompt replacement of blood and clotting factors. When the pack is removed gently, all may be well or no more than two or three bleeders may persist. These may be controlled with judicious use of diathermy. If there is still significant generalized blood loss not obviously coming from a single significant vessel, a hot pack should be reinserted and kept firmly in place until the blood volume and clotting factors have been replaced adequately. This may take more than an hour during which there is much merit in the surgical team taking a break. If necessary, the abdomen may be closed with the packs in place. Antibiotics are given and the packs removed gently the following day.

Urinary tract

Damage to the ureters occurs most commonly close to the cervix. Occasionally, the ureter may be injured at the pelvic brim when the ovarian vessels are being ligated.

The ureters may be cut, crushed or ligated but devascularization in a pelvic haematoma is common. The ureter is damaged most often when the surgeon is trying to control haemorrhage or when postoperative bleeding occurs. The injury usually becomes apparent after the operation, either when a uretero-vaginal fistula develops and the patient begins to leak urine constantly or when she complains of loin pain.

Damage to the bladder that is recognized during the operation is easily repaired in two layers. The bladder is drained by catheter for five to seven days to allow the repair to heal. Injury that goes unrecognized may result in a vesico-vaginal fistula – a hole that connects the bladder and the vagina. This results in constant leakage of urine. If the bladder had been damaged directly during the operation, the fistula becomes apparent soon after the operation. On the other hand if, as is more common, the fistula is due to the effects of a pelvic haematoma, it may not develop until several days after the operation.

The risks of urinary tract damage can be mitigated by good surgical technique. It is usually easy to identify the ovarian vessels and the ureter at the pelvic brim if the peritoneal incision through the round ligaments has been extended cranially. The ureter can be seen and felt attached to the underside of the peritoneum. The peritoneum between the vessels and the ureter is opened and enlarged gently, and the vessels clamped and ligated safely. The vesico-uterine fold of peritoneum should be divided carefully and the bladder lifted anteriorly to help define the plane between it and the uterus. When the correct plane has been entered, the bladder may be safely displaced caudally by gentle dissection with a single layer of a swab over one finger. This dissection should begin in the midline but must extend laterally to displace the bladder and lower ureter off the front of the cervix. This may provoke bleeding from the bladder pillars, which can be controlled with careful diathermy. If the bladder is adherent and resistant to this gentle manoeuvre, careful sharp dissection will be required to mobilize the bladder from the front of the cervix.

The ureter may be palpated between thumb and forefinger in the leaf of peritoneum just postero-lateral to the uterine cervix before the uterine clamps are applied. To avoid injury to the ureter in difficult cases, the uterine artery may be clamped, divided and ligated at the level of the internal os. A second, straight clamp is placed medial to this pedicle and as close to the uterus as possible but not attempting to include the vaginal angle. When this pedicle is divided and ligated, the ureter is displaced laterally and the angle of the vagina exposed safely. It is important to tie these ligatures close to the clamp rather than more laterally, where the ureter may become incorporated. Once the uterus has been removed safely, it is important to suture the vaginal vault with a technique that ensures good haemostasis to reduce the risk of vault haematoma. For the same reason, the anterior wall of the vagina and the base of the bladder should be inspected carefully before closing the abdomen. Some surgeons report excellent results with a vaginal 'T' tube drain on gentle suction.⁶

Intestinal tract

Injury to small bowel usually results from dissecting adhesions caused by previous surgery, infection, endometriosis or cancer. In most cases, provided the mesentery of

the bowel is undamaged, small holes can be repaired in two layers, taking care not to narrow the lumen. More extensive damage will require assessment by a gastrointestinal surgeon. The rectum is more susceptible to damage during pelvic surgery because of its intimate relations with the vagina. When the Pouch of Douglas behind the uterus is obliterated by adhesions or endometriosis, the risk of damage increases exponentially. Damage to the rectum recognized during the operation will require careful repair in two layers. If the damage is anything more than a small hole, it is usually safer to cover the repair with a sigmoid colostomy. The advice of a colorectal surgeon is invaluable.

Neurological damage

Numbness of the abdominal skin following a transverse incision is very common indeed. It is due to the unavoidable division of the many small nerves supplying the area. This usually resolves over a period of one to two years. Occasionally, a retractor will compress the ileo-inguinal or genitofemoral nerves, giving numbness over the mons pubis and anterior vulva or the upper thigh and labium majus. Radical hysterectomy will almost invariably disrupt the nerve supply to both bladder and rectum. This results in varying degrees of bladder and bowel hypotonia and lack of sensation. Fortunately, these usually improve substantially in the first few weeks after the operation and continue to do so for up to two years.

When dealing with intra-operative complications of any sort, the surgeon should not hesitate to ask for the help of another experienced colleague. Not only is such a person likely to be a much better assistant during a difficult operation but he or she will provide both practical and moral support at a time of very considerable stress.

Vaginal surgery

The problem of access that is such a feature of pelvic surgery is nowhere more acute than in vaginal surgery. However, reduced morbidity and more rapid recovery make the vaginal approach the route of choice whenever possible.

The more difficult the operation, the greater the potential for complications. The uterus must be mobile. While hysterectomy can be achieved without significant uterine descent, most surgeons would prefer to be able to reach the uterosacral ligaments comfortably before undertaking a vaginal hysterectomy. Similarly, most would not attempt to remove a uterus greater than the size of a 12-week pregnancy.

As with abdominal hysterectomy, it is important to identify the plane between the bladder and the cervix and to mobilize gently and displace the bladder thoroughly so that it and the ureters are moved out of harm's way. This is particularly important and often more difficult when the uterus has prolapsed completely through the vaginal entrance – a complete procidentia. If a hole is made in the bladder, it is repaired in two layers. Because this hole is more likely to be in the base of the bladder, care is needed not to damage or kink the ureter. The vascular pedicles need to be clamped and ligated with especial care because the vessels will retract into the pelvis if they slip out and can be very difficult to retrieve. Some surgeons put a second ligature around the pedicles and tie the uterosacral and the tubovarian pedicles together at the end of the

operation, sometimes also incorporating the vaginal vault in this ligature. The aim of this is to reduce the risk of subsequent prolapse of the bowel into the vagina. The risk is of damage to the pedicles and of fixing the ovaries close to the vaginal vault, where they may cause dyspareunia. There is no advantage in closing the peritoneum because it provides no support and will cover the defect in 48 hours. During a posterior repair, the rectum may be entered inadvertently. Provided that a satisfactory two-layer repair can be achieved, it is not usually necessary to cover this with a colostomy because the repair is retroperitoneal and will discharge through the vagina – and not into the peritoneal cavity – if it breaks down. After suturing together the levator muscles, a digital rectal examination should be performed to ensure that the sutures have not entered the rectum.

Postoperative management

Thromboembolic disease

Pulmonary embolism is the most feared of postoperative complications. It may present anywhere on a spectrum that extends from sudden death to mild chest pain and breathlessness. Indeed, it is quite likely that many remain undiagnosed and quite silent.

Prevention with the assiduous use of anti-embolism stockings, low-dose heparin, physiotherapy and early mobilization offer the best protection. Careful inspection of the legs for signs of deep venous thrombosis is good practice but probably of very little value in the prevention of pulmonary embolism. A high index of suspicion and prompt investigation of those with worrying signs or symptoms are essential. Ventilation perfusion scans can do no more than indicate the likelihood of embolism but a spiral CT (computed tomography scan) may be able to demonstrate thrombus in a pulmonary vessel. Prompt heparinization is probably safer than observation in cases of uncertainty.

Haemorrhage

Concealed postoperative haemorrhage is signalled first by a rising pulse rate and a reduction in urinary output. The hands and feet become cold due to constriction of the peripheral vessels in an attempt to maintain the blood pressure. Finally, when all the compensatory mechanisms have been exhausted, the blood pressure will fall. Hopefully, the warning signs will have been spotted before the fall in blood pressure becomes profound. Replacement of blood lost with blood substitutes and then blood products is essential. If the surgery has been confined to the pelvis, the most effective way of dealing with postoperative haemorrhage is angiography and embolization of the bleeding vessels. This usually avoids the need for further surgery. If angiography is not available, or other pathology is also suspected, a repeat laparotomy will be required.

Wound

Wound infection is one of the common postoperative complications. This is usually very mild and superficial but can be very serious. Necrotizing fasciitis has already

been mentioned. Wound dehiscence is a complication confined almost exclusively to vertical incisions. This can be made less likely by closing the abdominal wall in one layer apart from the skin.

Infection

Urinary-tract infection and chest infection are the other common problems. The latter can be particularly serious, especially in those whose respiratory function is already compromised. A particular problem after both abdominal and vaginal hysterectomy is an infected vault haematoma. Vault haematomata are very common and usually asymptomatic. However, when the haematoma becomes infected it will give rise to pelvic pain and pyrexia. This is treated with antibiotics and the haematoma usually discharges into the vagina with what can be a very frightening gush of fresh and altered blood. Sometimes, if there is a large collection in the pelvis it is prudent to incise and drain this under general anaesthesia. The discharge usually settles down in a week or so with few sequelae. Some women do continue to have pelvic pain for many months while the inflammatory process resolves.

Fistula

Urinary and faecal fistulae into the vagina have been discussed above. Faecal fistulae may develop through the abdominal wound.

Later complications

Problems of micturition and defecation have already been mentioned. These are usually problems associated with radical hysterectomy but may also follow vaginal surgery for prolapse or urinary incontinence. There is some evidence to suggest that urinary incontinence is slightly more common in the years after abdominal surgery. Painful intercourse may follow any vaginal operation but is uncommon after an abdominal hysterectomy. If adhesions have formed after the operation, abdominal pain and even bowel obstruction may result, sometimes many years later. Among women who have undergone pelvic or groin node dissection, lymphoedema of the leg or mons pubis affects about 23%.⁷ The degree of swelling is very variable and depends upon the extent of the dissection. The risk is increased very sharply if postoperative radiotherapy is administered.

Part 2. Gynaecological oncology

The management of women with gynaecological cancer has gradually evolved into a separate subspecialty. It is now widely recognized that women with any of these cancers should be treated by a dedicated multidisciplinary team, in a designated regional centre. The objective is to enable a rapid evaluation by all the relevant experts in a centre equipped to perform all the necessary investigations and able to offer the full range of treatment options. Unfortunately, it is also becoming an area in which medico-legal issues are appearing with ever-increasing frequency.

Pre-invasive disease

Cervical intra-epithelial neoplasia

Pre-invasive disease of the cervix is by far the commonest of pre-invasive conditions. Cervical cytology was first introduced to detect pre-invasive squamous cell lesions, now called cervical intra-epithelial neoplasia (CIN). The aim was to reduce the incidence of squamous-cell cancer of the cervix. It has been spectacularly successful in achieving that objective. However, unsurprisingly, it has been largely unsuccessful in affecting the incidence of adenocarcinoma of the cervix, which now represents 25% of all invasive cervical cancers – having previously been only 4% of the total.⁸ This change is due to the massive reduction in the number of squamous-cell carcinomas, achieved through cytology screening.

Colposcopy and treatment of CIN

Women with abnormal smears, suspicious symptoms or a clinically suspicious cervix are referred for colposcopy. The cervix is inspected through an instrument like a pair of binoculars and a dilute solution of acetic acid is applied to the cervix. This turns areas of CIN white. Unfortunately, other benign and normal conditions also turn white, so the magnification provided by the colposcope is needed to attempt to distinguish between them. A biopsy is performed for confirmation. If the whole lesion is visible, a small biopsy may be taken with punch biopsy forceps but this can be misleading if an unrepresentative sample has been taken. A larger conization or cone biopsy may be taken by any one of several instruments. Conization is not only diagnostic but is also usually therapeutic. An alternative approach to lesions that are fully visible and which the colposcopist is confident are not invasive is to ablate the area of abnormality with diathermy, cryocautery, laser vaporization or 'cold' coagulation. This requires a diagnostic punch biopsy first. Treatment of CIN by these outpatient procedures is highly successful in good hands. The cumulative incidence of recurrent CIN is 10% by 10 years and of invasive cancer is only 0.58% by eight years.⁹

One of the problem areas is failing to recognize invasion and treating with ablation or an inadequate, superficial, fragmented conization. It is important not to use ablative treatment if there is any risk of invasion. This includes women with what seem to be large, severe CIN III lesions. If the whole of the lesion is visible on the ectocervix, the conization must be at least 7 mm long to include lesions that extend into deep cervical glands. My own experience has led me to aim for 10 mm.

The biggest problems in colposcopy relate to those women in whom the squamocolumnar junction lies in the canal. It is all too easy to underestimate the extent to which a lesion involves the endocervical canal and if the whole lesion cannot be seen clearly, invasion cannot be excluded. Even if the ultimate intention is to treat the woman with hysterectomy, a diagnostic cone biopsy is mandatory to exclude invasive cancer. If a prior cone biopsy shows CIN II–III extending to the upper, endocervical margins, residual invasive disease has not been excluded. A second cone biopsy may be a prudent investigation before hysterectomy. If there are good reasons for not doing this, they must be documented clearly and the potential risk discussed with the patient.

Conization may rarely result in torrential haemorrhage for which an emergency hysterectomy is required. This is more likely if the cervix has been treated before. Stenosis of the cervix is not uncommon following conization but it is very uncommon for it to give rise to problems with menstruation or subsequent pregnancy. The opposite extreme of cervical incompetence leading to premature delivery is even more uncommon and is only seen after a very long biopsy of the cervix which removes a large amount of tissue.¹⁰

Vulval intra-epithelial neoplasia

Vulval intra-epithelial neoplasia (VIN) is very much less common than CIN, the risk of progression to invasion is less well documented and the treatment is both less effective and more mutilating.¹¹

Most women with VIN present with itching or soreness of the vulva but only a small minority of women with these symptoms have VIN. It can usually be recognized by naked-eye inspection if the observer is experienced but is best seen under low magnification and good illumination. Many people use the colposcope for this purpose. Dilute acetic acid will help to delineate areas of VIN but the colour changes take far longer to develop on the vulva than on the cervix or vagina.

The diagnosis may be confirmed by small, punch biopsies but these are more likely to be unrepresentative than cervical biopsies because of the larger size and multifocal nature of most VIN. There are essentially two schools of thought about the management of VIN. One school advocates early excision biopsy of *all* visible lesions – sometimes preceded by multiple ‘mapping’ punch biopsies. In women with large, widespread lesions, this may necessitate superficial vulvectomy. The argument for this is that the future risk of invasive disease will be reduced. The other school adopts a conservative approach, excising lesions only if they are causing symptoms that cannot be controlled by topical steroids or if invasive disease is suspected. The reasoning behind this approach is that some of these lesions will regress, and that excision is followed by a very high rate of recurrence and can be mutilating.

Endometrial hyperplasia

There is much confusion about the terminology used and the risk of malignancy associated with endometrial hyperplasia.¹² Cystic hyperplasia is found commonly in postmenopausal women, is not premalignant and requires no further treatment or follow-up. Atypical hyperplasia contains glands that show nuclear atypia and may coexist with endometrial cancer in 20–50% of cases. Progression to invasion may occur in up to 89%. Hysterectomy and bilateral salpingo-oophorectomy is recommended for these women. Those who hope for further children may be treated with progestins but they then require long-term follow-up. The prospects for fertility may well remain poor and the recurrence rate is high. Complex or adenomatous hyperplasia is often found in association with atypical hyperplasia, in which case it should be treated in the same way as an atypical lesion. When adenomatous hyperplasia occurs without atypia, the risk of malignancy is probably low, and further management can be based upon subsequent symptoms.

Cervical cancer

Cervical cancer is increasingly often diagnosed by cervical screening. Such women have a better prognosis than those who present to their doctor with symptoms. Postcoital bleeding is the classical symptom associated with cervical cancer, but this is a common complaint and only 4% will have a malignancy.¹³ In most cases, these tumours are clinically obvious to gynaecologists at least, although it would probably be unreasonable to expect a general practitioner to recognize cervical cancer. Intermenstrual bleeding and heavy periods may also be due to cervical cancer but these are even more common complaints and are very rarely caused by cancer. The same may be said of abdominal pain or backache which, when associated with cervical cancer, usually reflect very advanced disease with a poor prognosis.

The investigation of a woman with cervical cancer should include a biopsy confirming the diagnosis, an examination under anaesthesia to assess the size and location of the tumour clinically, a chest X-ray or CT of the chest to identify pulmonary metastases, and an intravenous urogram (or some similar imaging investigation of the urinary tract). We tend to rely upon an abdominal CT scan performed to identify enlarged para-aortic nodes. CT imaging in the pelvis is unreliable for the most part. Magnetic resonance imaging (MRI) is undoubtedly the investigation of choice when looking at the size of the tumour and identifying enlarged pelvic lymph nodes. However, the interpretation of these images requires a radiologist with experience of cervical cancer. The quality of MRI images of the cervix is improved beyond all recognition by the use of an endovaginal receiver coil.¹⁴

Younger women have most to gain from radical surgery for early tumours. For the remainder, concurrent chemoradiotherapy has become the treatment of choice.¹⁵ The complications associated with radical hysterectomy have been described above. Clearly, all of these complications are more likely in association with radical surgery.

Endometrial cancer

Endometrial cancer is most common after the menopause and most women present with postmenopausal or perimenopausal bleeding. However, in younger women, it may cause irregular or heavy periods. There is no effective screening test for endometrial cancer. Transvaginal ultrasound, so useful in the triage of symptomatic women with postmenopausal bleeding, is unhelpful in asymptomatic women because of the very high false-positive rate.

Investigation includes confirmation of the diagnosis by biopsy or review of previous biopsies, and chest X-ray to identify pulmonary metastases. Examination under anaesthesia is helpful to identify vaginal metastases and the rare case with infiltration into the parametria. It may also identify adnexal spread but that is usually recognized on ultrasound. Hysteroscopy is used to identify spread to the cervix. Concerns that this may result in dissemination of the tumour are misplaced. MRI can be used to identify those with deep invasion of the myometrium and to recognize enlarged pelvic lymph nodes.

The standard treatment of endometrial cancer is a 'simple' total abdominal hysterectomy and bilateral salpingo-oophorectomy. There is no benefit from radical excision of the parametria or upper vagina. The role of lymphadenectomy is controversial. If the tumour invades deeply into the myometrium or if the histology is high grade, pelvic radiotherapy is usually offered. However, recent data from a controlled trial in Holland¹⁶ suggests that it is equally effective to wait and treat only those who develop a recurrence.

Ovarian cancer

There are two main varieties of ovarian cancer. Epithelial ovarian cancer is the commoner variety, is found predominantly in older women and carries a high mortality. The non-epithelial group is relatively rare and found mainly in children and young women. On the whole, these are very sensitive to chemotherapy and have a good prognosis.

Epithelial ovarian cancer usually presents at an advanced stage with widespread disease throughout the abdomen. This is probably because it grows silently in the pelvis and does not cause symptoms until it is already very large. However, there is some evidence that at least some ovarian cancers grow very quickly. The symptoms most often associated with ovarian cancer are abdominal pain, discomfort and distension. These are very non-specific and could be due to any one of a myriad of other conditions. There is considerable interest in developing a screening strategy for ovarian cancer but no effective method has emerged as yet. Ultrasound and testing for the tumour marker CA125 in blood samples both give high false-positive rates, leading to unnecessary operations.¹⁷ Pre-operative confirmation of the diagnosis is not possible. A chest X-ray is taken to identify lung metastases. If there is concern about the possibility of colorectal cancer, endoscopy or a barium enema may be appropriate.

The surgical treatment of ovarian cancer involves a total abdominal hysterectomy and bilateral salpingo-oophorectomy with removal of the omentum and any other foci of resectable tumour. The aim, of course, is to remove all of the tumour if possible. This is followed by chemotherapy with platinum- and taxane-based chemotherapy. Radiotherapy has little to offer.

Vulval cancer

Vulval cancer is largely a disease of older women. Most present with symptomatic ulcers.

Investigation consists of a biopsy to confirm the diagnosis, chest X-ray to identify pulmonary metastases, careful palpation of the groins to detect enlarged lymph nodes and examination under anaesthesia to identify urethral or rectal involvement. Ultrasound of the groin combined with cytological examination of fine needle aspirates of suspicious nodes may assist in identifying groin node disease preoperatively but cannot exclude metastatic disease.

The treatment is surgical. Radical removal of the primary tumour is combined with groin node dissection through separate incisions unless the nodes are obviously clinically enlarged. If the tumour is situated on one side away from the midline, dissection of the opposite groin may be omitted unless the ipsilateral groin contains metastatic disease. Postoperative pelvic radiotherapy is given if more than two lymph nodes are involved with tumour. In some cases, pre-operative radiotherapy may be given to the vulva to shrink the tumour before surgery.

The effects of delays in diagnosis and treatment

Delays in instituting treatment are endemic in the NHS due to lack of resources. Not only is this distressing for patients and their relatives but also the deleterious effect of delay upon prognosis is becoming more widely appreciated. Not infrequently, delays in treatment result in operable tumours becoming inoperable. Squamous-cell tumours double in volume every seven weeks on average,¹⁸ so a cervical cancer 2.5 cm in diameter would double in volume from 8.2 cm³ to 16.4 cm³ in only seven weeks and, in the process, would have crossed the threshold into a group with a poorer prognosis. This knowledge must spur us all on to shorten the gap between diagnosis and treatment as far as remains consistent with appropriate assessment and treatment. Better to wait a week than to offer suboptimal treatment but better still to see referred patients promptly, complete the investigations efficiently and be able to offer appropriate treatment within 20 working days of the first appointment.

Conclusion

As in every field of medicine, there is in gynaecology the opportunity for great good or great harm. The more difficult the task attempted, the greater the risk involved. In closing, I can do no better than to quote the words of Professor Chris Hudson to those who offer professional opinions on medico-legal matters – that ‘maloccurrence is not *ipso facto* malpractice’.

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