Chapter 1

Ultrasound and Menorrhagia

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1.1 Introduction

The diagnosis and management of women with abnormal vaginal bleeding comprises a large portion of the gynaecologist’s workload. Up to a third of women referred to a general gynaecology outpatient clinic will have abnormal uterine bleeding, and it remains the most common indication for surgical intervention in gynaecology.

Up to 60% of abnormal uterine bleeding can be described as “dysfunctional” in nature, indicating that there is no underlying organic pathology. The aim of any group of investigations within this area of gynaecology should be to diagnose accurately the absence of pathology, thus facilitating reassurance and early treatment plans if required, without recourse to operative intervention unless indicated. The reverse is also true. As an increasing number of different strategies have been introduced in the management of menorrhagia, so has the need to diagnose accurately possible underlying pathology. A balance therefore needs to be established in order to provide accurate, early diagnosis and thus treatment, with the minimum of investigations.

The assessment of women with menstrual disorders has been taken out of the constraints of the general gynaecology clinic and operating theatre by the incorporation of transvaginal ultrasonography (TVS), along with outpatient endometrial sampling techniques, as part of a “one-stop” approach to diagnosis and management. When compared with outpatient hysteroscopy in the evaluation of endometrial pathology, TVS, with or without the addition of saline as a negative contrast agent, compares favourably.1-3 It has been shown to be a well-tolerated part of the examination, providing not only an assessment of the uterine cavity and myometrium, but also of the adnexa at the same time.

In this chapter we will summarise the role of ultrasound in the diagnosis and management of the woman presenting with menorrhagia.

1.2 Aetiology of Abnormal Vaginal Bleeding

The differential diagnoses of women presenting with abnormal vaginal bleeding can be divided into genital tract disease, systemic disease and iatrogenic causes; these are summarised in Table 1.1. When all these have been excluded, a diagnosis of dysfunctional uterine bleeding can be made. Pregnancy should be excluded in all premenopausal women with abnormal vaginal bleeding. There needs to be a heightened suspicion of underlying systemic disease in younger patients presenting with heavy vaginal bleeding, as up to 20%4 may have a coagulopathy. Screening for a coagulopathy is also advisable in women with anovulatory dysfunctional bleeding who fail to respond to medical or surgical therapy.

1.3 Investigations

The investigation of abnormal uterine bleeding will centre on an assessment of the endometrium. Undirected endometrial sampling alone has no role in the evaluation of abnormal uterine bleeding, as it will miss focal lesions, such as polyps and fibroids. Dilatation and curettage has a false-negative rate of up to 6% for diagnosing endometrial carcinoma and hyperplasia.5,6 In one study6 where dilatation and curettage was performed prior to hysterectomy, in 60% of patients less than half of the endometrial cavity was sampled. Hysteroscopy and directed biopsy remains the “gold standard” in the evaluation of intrauterine abnormalities, and it is against this that other techniques are still compared. Transvaginal ultrasound is highly sensitive in the diagnosis of intracavity pathology, but lacks specificity in many cases.7,8 The sensitivity and specificity is improved...
by hydrosonography (HS), to equal and in some studies surpass, that of outpatient hysteroscopy. When patient preference is considered, TVS with HS is preferred to outpatient hysteroscopy, making TVS an ideal first-line investigation for menstrual disorders (Figure 1.1).

### 1.3.1 Hydrosonography

This technique involves the introduction of a sonographic negative contrast agent into the uterine cavity, to enhance routine TVS in the identification of uterine cavity pathology (Figure 1.2).

A conventional transvaginal scan is performed to assess the uterus and adnexa in the coronal and sagittal planes. The examination should ideally be performed in the proliferative phase of the menstrual cycle, once menstruation has ceased. This not only enhances views of the uterine cavity, but also reduces the risk of disturbing an early intrauterine pregnancy. The ultrasound probe is removed and a bivalve Cuscoe’s speculum inserted. The cervix is identified and cleaned with an antiseptic solution. The procedure should be postponed and an infection screen performed with appropriate antibiotic therapy if there are any signs of pelvic infection. The patient should be warned prior to the procedure that she may experience a dull ache like a period pain. Covering antibiotics may be given for potentially fertile women.

After the cervix has been cleaned, a fine-bore catheter (with or without a balloon), which has already been primed with sterile saline solution, is passed through the os using sponge holding forceps until the uterine fundus is reached. A volsellum may be needed to apply counter-traction to the cervix. The speculum is removed, taking care not to dislodge the catheter, and a 20 ml syringe of sterile saline is reattached to the catheter. The ultrasound probe is reintroduced and the saline is slowly infused, causing uterine distension. The uterine cavity is reassessed in both the sagittal and coronal planes for focal and global endometrial defects.

### Table 1.1. Causes of abnormal vaginal bleeding

<table>
<thead>
<tr>
<th>Genital tract disease</th>
<th>Benign conditions</th>
<th>Malignant tumours</th>
<th>Infection</th>
<th>Systemic disease</th>
<th>Coagulopathy</th>
<th>Thyroid disorders</th>
<th>Liver disease</th>
<th>Sarcoïdosis</th>
<th>Iatrogenic causes</th>
<th>Anticoagulants</th>
<th>Intrauterine contraceptive devices</th>
<th>Phenytin</th>
<th>Sex steroids</th>
<th>Dysfunctional uterine bleeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cervical polyps and erosions</td>
<td>Uterine leiomyomas</td>
<td>Endometrial polyps</td>
<td>Adenomyosis</td>
<td>Endometriosis</td>
<td>Endometrial</td>
<td>Endometrial</td>
<td>Cervical</td>
<td>Vaginal</td>
<td>Vulvar</td>
<td>Fallopian tube</td>
<td>Granulosa theca cell ovarian</td>
<td>Endometritis</td>
<td>Salpingitis</td>
<td>Acute and chronic</td>
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<td>Sex steroids</td>
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<td>Ovulatory</td>
<td>Anovulatory</td>
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**Figure 1.1** Sagittal view of an anteverted uterus. The endometrium is thickened and of mixed echoes.

**Figure 1.2** Sagittal view of a normal uterus.