

# Assessment and management of miscarriage

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*Your next patient is Sarah, 26 years old. She is eight weeks pregnant with her first pregnancy, a planned pregnancy. She has had pelvic cramps for 24 hours and light vaginal bleeding this morning.*

Miscarriage is defined as spontaneous loss of a pregnancy before 20 weeks gestation, but most miscarriages occur in the first trimester of pregnancy. Up to 20% of identified pregnancies result in miscarriage.<sup>1</sup> Whether it is a planned or unplanned pregnancy, miscarriage is usually a very stressful experience for those involved, particularly for the pregnant woman.

## Assessment of bleeding in early pregnancy

Bleeding in early pregnancy is common and the differential diagnoses are extensive (see Box 1). A full history and examination, along with appropriate investigations, is important to comprehensively assess any woman presenting with vaginal bleeding early in pregnancy.

Quantitative serum **beta human chorionic gonadotrophin (HCG)** and

*Box 1. Differential diagnoses of bleeding in early pregnancy*

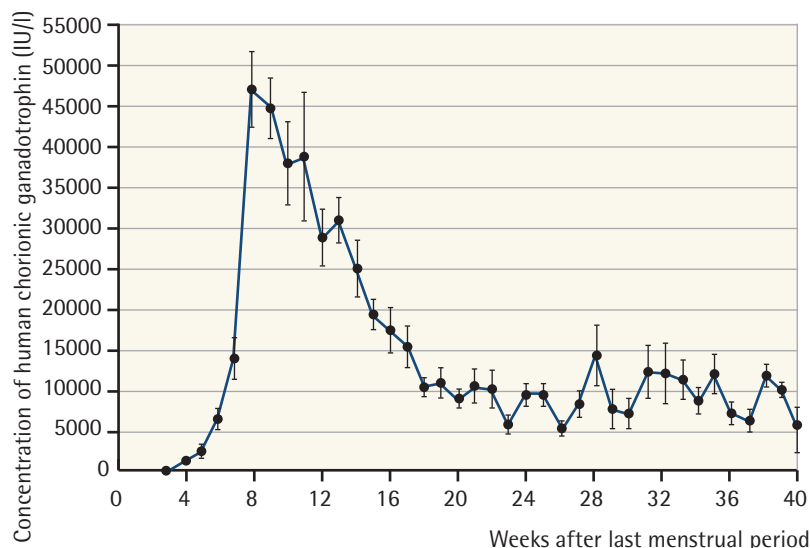
- Idiopathic bleeding in a viable pregnancy
- Miscarriage
- Ectopic pregnancy
- Molar pregnancy
- Cervical or vaginal abnormality, e.g. infection, polyp, trauma, malignancy

**pelvic ultrasound scan** are the most useful investigations in primary care to determine if the pregnancy is intra-uterine or ectopic, and if the pregnancy is viable. In a normal pregnancy beta HCG doubles every two to three days through to its maximum level at nine to 10 weeks gestation. The HCG level then drops but will remain elevated throughout the pregnancy (see Figure 1). If the pregnancy is not viable the HCG level will plateau or fall. It can take up to three to four weeks for the HCG to drop to non-pregnant levels after a pregnancy, depending on the gestation reached. If the beta HCG is low for gestational age, suspect pending miscarriage or ectopic pregnancy. If the beta HCG is excessively high, suspect molar pregnancy. However, the dating of the pregnancy could be wrong.

A transvaginal **ultrasound scan** can reliably detect products of conception, viable or non-viable, in the uterus.<sup>2</sup> However, it is not so reliable at detecting an ectopic pregnancy. In a normal pregnancy the foetal heart beat should be seen on transvaginal ultrasound by six to seven weeks' gestation. It should also be detectable when the intra-uterine gestational sac is 2cm diameter and the Crown Rump Length (CRL) of the embryo is 5mm. The beta HCG should be 1800 to 3500IU by the time that the gestational sac is seen.

Sometimes the pregnancy is of 'unknown location', where the pregnancy test is positive but there is no sign of the pregnancy on ultrasound scan. Good follow-up with serial HCG and ultrasound scans is important until the pregnancy is located and

Figure 1. Mean serum HCG concentrations throughout normal pregnancy<sup>3</sup>



appropriate management is arranged. If ectopic pregnancy cannot be ruled out, consider referral to hospital for further assessment, especially if the woman has pelvic pain. Molar pregnancy should also be considered in the differential diagnoses.

Serum progesterone levels can also be useful in assessing viability of a pregnancy, but it is not commonly used in a primary care setting. A progesterone level greater than 25ng/ml suggests a normal pregnancy, but a level less than 5ng/ml is associated with a poor pregnancy outcome.

### Miscarriage

Confronting the possible loss of a pregnancy, and then the management of that miscarriage, can be very difficult for a woman and her partner. For most it is a very emotive time of loss and grief, and they need good support from family and friends, and from medical staff. Many hospitals have an early pregnancy assessment service, providing a supportive environment for assessment of possible complications of early pregnancy, and follow through. However, GPs and other primary care providers, particularly in rural areas and provincial towns, can undertake much of the assessment and follow through of early pregnancy loss as long as they can access testing for serial serum beta HCG, pelvic ultrasound scanning, and 24-hour acute care in case of severe bleeding.

The types of miscarriage are: threatened miscarriage, inevitable miscarriage, incomplete miscarriage, complete miscarriage, missed miscarriage, septic miscarriage, and recurrent miscarriage. The presentation, investigations, management, and risks and side effects of these are listed in Table 1.

A missed miscarriage is usually diagnosed by routine ultrasound

such as scanning for assessment of nuchal translucency, or when symptoms of pregnancy have ceased. The ultrasound scan may show an empty gestational sac (previously called a blighted ovum) through to an intact foetus with no foetal heartbeat, which is often smaller than the dating of the pregnancy would suggest.

A complete miscarriage can only be diagnosed if the uterus is empty and an ectopic pregnancy has been ruled out on pelvic ultrasound scan, unless the products of conception passed vaginally have been clearly identified.

Pelvic ultrasound scan can detect a molar pregnancy but a partial mole may not be so easily detected on a scan. Any products of conception passed should be collected, if possible, for histological assessment.

### Management of miscarriage

Immediate surgical evacuation of the uterus used to be routine for all women presenting with a spontaneous miscarriage because of concern about infection and coagulation problems from persistent retained products of conception.<sup>4</sup> Now expectant management, surgical management and, in many centres, medical management, are available. Women need to be counselled well about management options. Women have

higher acceptance of the procedure if they have the option to choose the course of management.<sup>5,6</sup>

### Women have higher acceptance of the procedure if they have the option to choose the course of management

**Expectant management** involves informing the woman well about her miscarriage,

what to expect (pain, bleeding, passing tissue) when she miscarries spontaneously, how to access acute care if she develops very heavy vaginal bleeding or severe pain, and to arrange follow-up. The woman will usually have serial HCGs and ultrasound scans as required. She needs to know that a surgical evacuation is recom-

mended if spontaneous miscarriage does not occur, usually within two weeks. There is concern about infection risk if products of conception are retained for a prolonged period.<sup>4</sup> Molar pregnancy must be considered if the HCG levels plateau or rise in this follow-up period.

**Surgical management** is by aspiration curettage or dilatation and curettage (D&C).

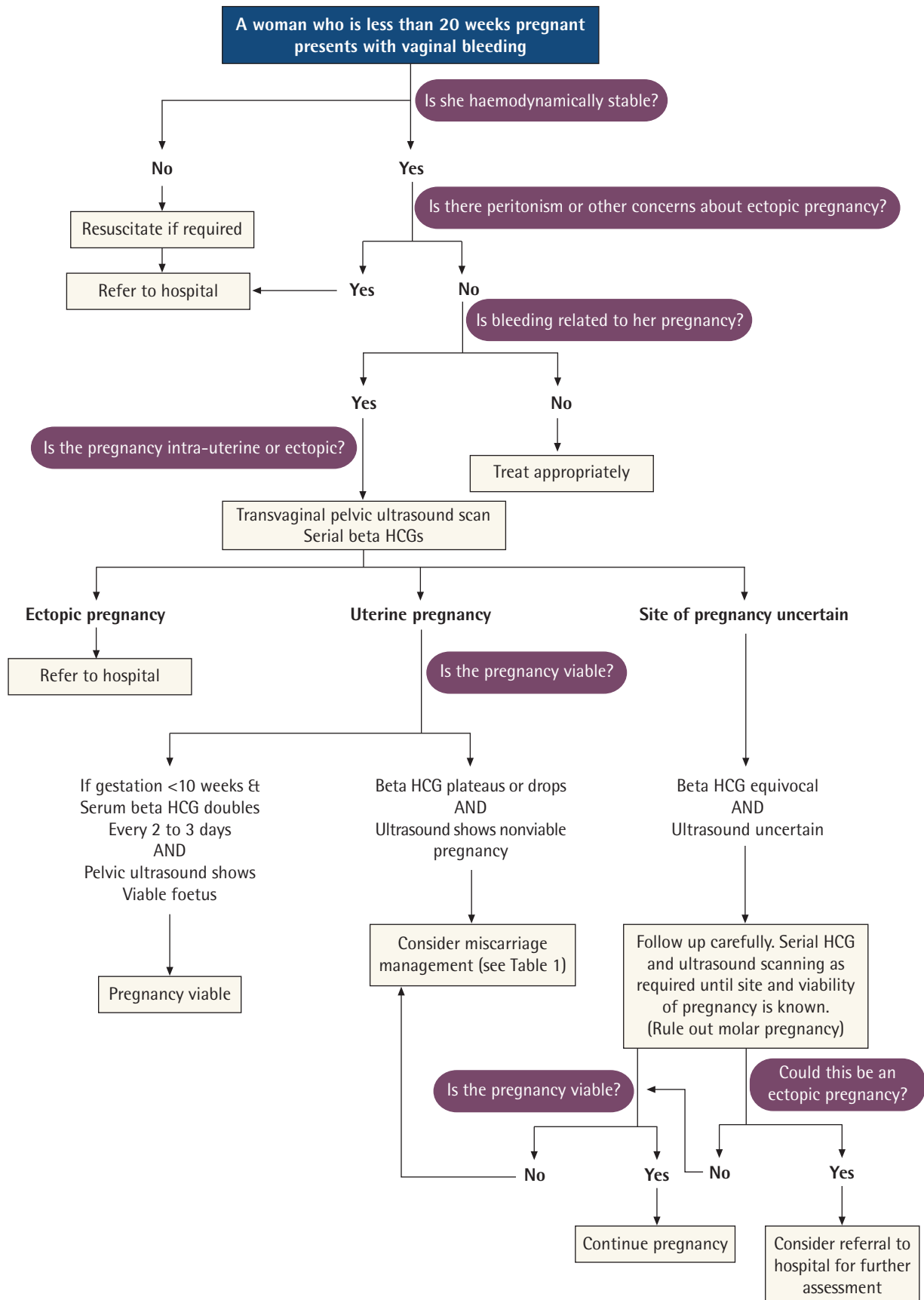
**Medical management** involves treatment with vaginal or oral prostaglandin, usually misoprostol. This stimulates uterine contractions to expel the products of conception, which usually occurs within a few hours. Follow-up is required over 24 to 48 hours and surgical evacuation is usually offered if spontaneous miscarriage has not occurred within that time. The woman should be well counselled about what to expect (pain, bleeding, passing tissue) when she passes the products of conception, how to access acute care if she develops very heavy vaginal bleeding or severe pain. Medical management can cause more pain and heavier bleeding than the other options.<sup>7</sup> Further follow-up should be arranged as for expectant management, to ensure complete evacuation of products of conception and to rule out molar pregnancy. The anti-progesterone abortifacient, mifepristone, can also be included in the medical management regime.

The rate of success and possible risks and side effects of the management options can vary with the different types of miscarriage (see Table 1). Expectant management is as effective as surgical management of spontaneous miscarriage when the possible risks and side effects of each method are considered.<sup>8</sup> Medical management offers little advantage over expectant management for incomplete or inevitable miscarriage, except that the products of conception may be passed more quickly. However medical management does have a higher success rate than expectant management for missed miscarriage.<sup>7,9</sup>

Table 1. Assessment and management of the different categories of miscarriage

Type	Presentation	Investigations	Management	Risks / Complications
<b>Threatened miscarriage</b>	Vaginal bleeding ± Pelvic pain  Cervical os closed	<b>Serial HCGs:</b> increasing  <b>Ultrasound scan:</b> viable fetus	Weekly monitoring until bleeding settles. Bed rest often advised – little proven benefit <sup>14</sup>	Possible risk of pre-term labour, intra-uterine growth retardation (IUGR), oligohydramnios
<b>Inevitable miscarriage</b>	Vaginal bleeding  Pelvic pain  Cervical os open	<b>Serial HCGs:</b> plateau or drops  <b>Ultrasound scan:</b> Non-viable pregnancy, products of conception in utero	<b>Expectant:</b> 82 to 96% success within two weeks <sup>15,16</sup>  <b>Medical:</b> No significant additional benefit over expectant management <sup>9</sup>  <b>Surgical:</b> Recommended if e.g. haemorrhage, severe pain	<b>Expectant:</b> Higher risk of pelvic pain, heavy PV bleeding. Surgical evacuation required if treatment not successful  <b>Medical:</b> Products of conception expelled more quickly but more pain and bleeding than expectant management  <b>Surgical:</b> Possible higher infection rate, risk of cervical trauma, uterine perforation <sup>8,11</sup>
<b>Incomplete miscarriage</b>	Vaginal bleeding  Pelvic pain  Cervical os open, some products of conception may be identified vaginally	<b>Serial HCGs:</b> plateau or drops  <b>Ultrasound:</b> Some products of conception in utero	<b>Expectant:</b> 82 to 96% success within two weeks <sup>15,16</sup>  <b>Medical:</b> No significant additional benefit over expectant management <sup>9</sup>  <b>Surgical:</b> Recommended if e.g. haemorrhage, severe pain	<b>Expectant:</b> Higher risk of pelvic pain, heavy PV bleeding. Surgical evacuation required if treatment not successful  <b>Medical:</b> Products of conception expelled more quickly but more pain and bleeding than expectant management  <b>Surgical:</b> Possible higher infection rate, risk of cervical trauma, uterine perforation <sup>8,11</sup>
<b>Complete miscarriage</b>	Cervix open  All products of conception expelled  Histological assessment of these if possible	<b>Serial HCGs:</b> Plateau or drops  <b>Ultrasound:</b> No products of conception in utero; no ectopic pregnancy	<b>Expectant:</b> If diagnosis is certain, only expectant management is required	Routine follow-up
<b>Missed miscarriage</b>	Sometimes vaginal bleeding  Loss of pregnancy symptoms  Usually no pelvic pain  Cervical os closed	<b>Serial HCGs:</b> plateau or drops  <b>Ultrasound:</b> Non-viable pregnancy in utero  Has not been expelled	<b>Expectant:</b> 16 to 76% success rate <sup>17</sup>  <b>Medical:</b> Up to 80% success rate <sup>7</sup>  <b>Surgical:</b> 100% success rate	<b>Expectant:</b> Greater chance that not successful. Women need to be prepared for possible surgical evacuation  <b>Medical:</b> Products of conception expelled more reliably but more pain and bleeding than expectant management  <b>Surgical:</b> Possible higher infection rate
<b>Septic miscarriage</b>	Miscarriage complicated by intrauterine infection		Antibiotics Prompt surgical evacuation	Septicaemia
<b>Recurrent miscarriage</b>	Three or more miscarriages		Refer for specialist assessment	

Figure 2. Diagnosis of bleeding in early pregnancy



Women may have more prolonged vaginal bleeding and pelvic pain with expectant management and medical management, than with surgical management, and, if the products of conception are not passed, the woman will then need surgical intervention. Surgical management may have a higher risk of infection,<sup>8,10</sup> though evidence on this is variable.<sup>11</sup>

Blood group and antibodies should be determined when a woman presents with bleeding in early pregnancy. Anti-D should be given to an Rh-ve woman who is having a spontaneous miscarriage to prevent Rhe-

sus iso-immunisation, particularly if the pregnancy is more than 12 weeks gestation, if the woman has heavy bleeding, or the miscarriage is managed surgically or medically. Management of Rhesus negative women who are miscarrying is currently under review.<sup>12,13</sup>

## Coping with a miscarriage

Most women, and their partners, will go through a grieving process after a miscarriage. They may experience anxiety and depression, and feel guilt about the miscarriage, that they may in some way have caused it. This can be particularly difficult if it was a

first pregnancy, a wanted pregnancy or after fertility treatment. The woman and the couple need time to grieve, and to be supported in that. They should be reassured that the miscarriage was not their fault, that it is very common and usually without a known cause. They may also be concerned that they may have difficulty getting pregnant again, or may be fearful of the risk of miscarriage with a subsequent pregnancy. Counselling may help in working through this difficult time.<sup>18,19</sup>

## Competing interests

None declared.

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