VAGINAL BLEEDING IN EARLY PREGNANCY—I

Geoffrey Chamberlain

Causes of bleeding

- Abortion or miscarriage
- Ectopic pregnancy
- Trophoblast disease
- Lesions of cervix or vagina

Bleeding drives patients to their general practitioner swiftly. Vaginal bleeding in pregnancy makes the woman think that she may be miscarrying, so this brings her even more promptly; the practitioner thence has the opportunity to diagnose the cause and start prompt management.

Bleeding has four known causes in early pregnancy (box). In addition, bleeding occurs for no apparent reason in a large number of cases. In early pregnancy such cases are commonly categorised as threatened miscarriage, but this is fudging the issue for in many cases the conceptus and its future placental system are not involved; doctors should be honest and say that they do not know the cause.

Miscarriage or abortion

Types of miscarriage

- Threatened miscarriage
- Inevitable miscarriage
  - Complete
  - Incomplete
- Missed abortion
- Recurrent miscarriage
- Criminal abortion
- Septic abortion
- Therapeutic abortion

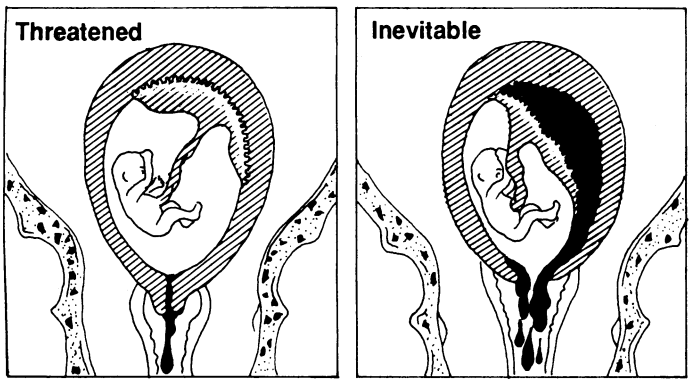
The terms miscarriage and abortion are almost synonymous, but miscarriage is a softer word used for the spontaneous event.

Threatened miscarriage—Women bleed a little from the vagina during a threatened miscarriage but there is little abdominal pain. The uterus is enlarged and the cervix closed. Pregnancy may proceed.

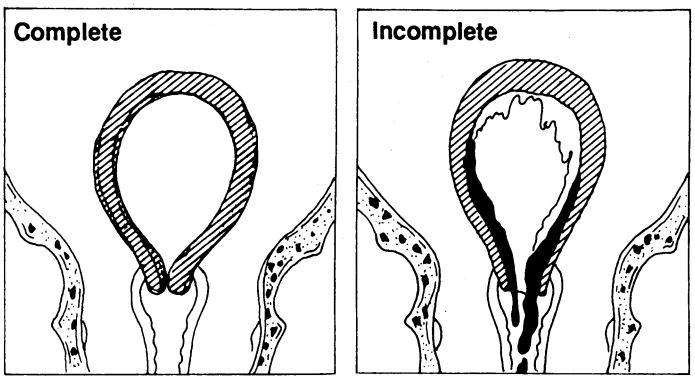
Incomplete miscarriage—Abortion is inevitable and the cervical os open in an incomplete miscarriage. Blood loss is often great and lower abdominal cramping pains accompany the uterine contractions. Some products of conception and clots may be passed but much decidua is retained and so the abortion is incomplete.

Complete miscarriage—The cervical os is open and the uterus completely expels its contents in a complete miscarriage. Such miscarriages are more likely after 16 weeks of pregnancy than earlier, when they are mostly incomplete.

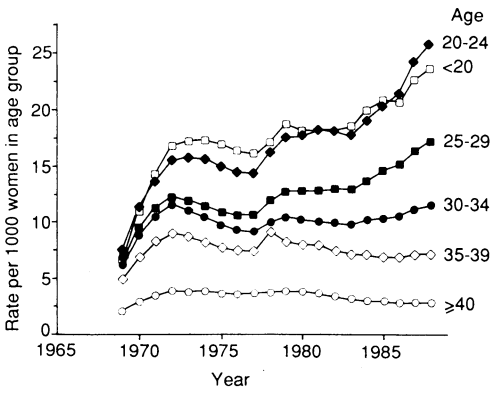
Septic abortion follows the ascent of organisms from the vagina into the uterus, often after an incomplete or induced abortion under non-sterile conditions. As well as heavy bleeding and pain, the woman commonly has a fever and may develop signs of endotoxic shock. The commonest organisms are *Escherichia coli* and *Streptococcus faecalis*.



In a threatened abortion the cervix is still closed and there is not much bleeding; in an inevitable miscarriage the cervix has started to open and the membranes often have ruptured. There is usually more bleeding.



A complete miscarriage means that the uterus is empty of clot and decidua, whereas in an incomplete miscarriage the embryo has been passed vaginally but some part of the membrane or decidua is retained. There may also be clots.



Terminations of pregnancy by age group in England and Wales, 1969-88. Most operations are performed outside the NHS, many being done through charity clinics.

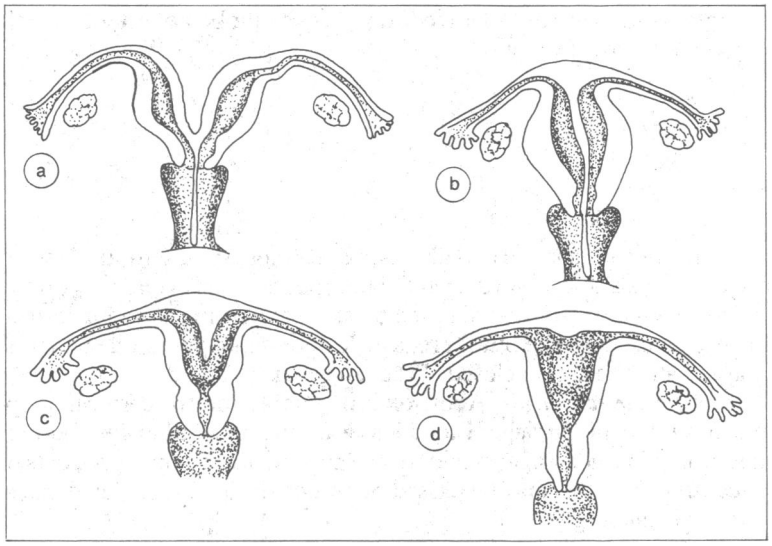
Missed abortion—The embryo dies and is absorbed but the uterus does not expel the decidua and sac of membranes in a missed abortion. The woman feels a dull weight in the pelvis and the uterus stops enlarging. Old blood is passed as a brown, watery discharge. This condition is diagnosed more frequently now that ultrasonography is used in very early pregnancy.

Recurrent abortion is diagnosed when a woman has three or more spontaneous miscarriages. Such women deserve gynaecological and immunological investigation; many gynaecologists start investigations after two consecutive miscarriages in women over 35.

Therapeutic abortion is now common in Britain, with over 170 000 women in England and Wales having such abortions each year. Usually the general practitioner knows but occasionally the woman has bypassed him, presenting only after the event with vaginal bleeding, an open cervix, and some abdominal pain. This means that decidua or blood clot is left and needs the same attention as does any other incomplete miscarriage.

Causes

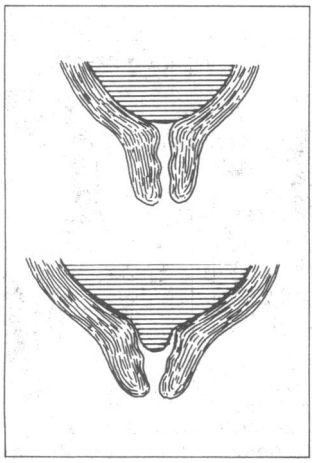
Embryonic abnormalities—Chromosomal abnormalities are common, arising from a change in the nucleus of either gamete or a spontaneous mutation inside the fertilised oocyte. At the time of fertilisation splitting and rejoining of genetic material may be imperfect. Such changes are not usually recurrent, and parents should be told this.



Congenital abnormalities of the uterus caused by non-absorption of the septum during the fusion of the two müllerian ducts. (*a*) Complete double uterus, double cervix, and vaginal septum. (*b*) Double uterine cavity within a single body; the cervix and vagina has a septum. (*c*) A subseptate uterus in which the septum does not reach down to the cervix. (*d*) Arcuate uterus with a dimple on top of a single uterus with a single cervix.

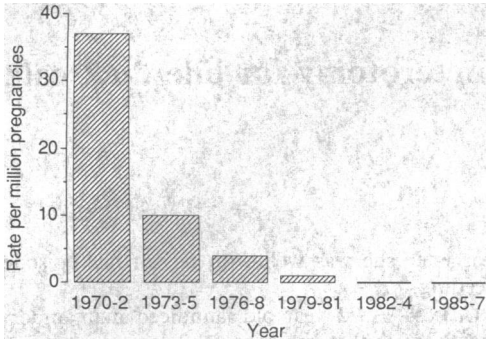
Immunological rejection—The fetus is genetically foreign to the mother and yet in most cases is not rejected. In many cases blocking antibodies that inhibit the cell mediated rejection of the embryo are stimulated by antigens from the trophoblast. If a couple share more HLA antigens than usual the trophoblast may not stimulate production of these maternal blocking antibodies and embryonic tissue will be rejected. Up to 30% of spontaneous miscarriages have been attributed to this reason. If there are recurrent miscarriages both sets of antigens should be checked.

Uterine abnormalities—The uterus is formed during embryonic development from two tubes fusing together to make a common cavity. Occasionally various degrees of non-absorption in the midline septum occur, leaving either two cavities or a cavity partly divided by a septum down the middle. The blood supply to this median structure is usually poor and implantation on it may be followed by miscarriage.


Cervical incompetence.

Cervical incompetence—The cervix may have some weakness—either congenital or acquired after a previous harsh dilatation—which could be associated with a spontaneous miscarriage in the mid-trimester (13-27 weeks). The unsupported membranes bulge into the cervical canal through the internal os and rupture early, which causes the abortive process. The incompetence may be diagnosed before pregnancy by a hysterogram (a radiological examination of the uterine cavity) or in pregnancy by ultrasonography. Most treatment, however, is started on their being a previous mid-trimester miscarriage, particularly if the membranes ruptured before any uterine contractions occurred.

Maternal disease is unlikely to be a major cause of miscarriage in the United Kingdom, but hypertension and renal disease are still associated with higher rates of miscarriage in later pregnancy. Maternal infections can affect the fetus, particularly rubella, toxoplasmosis, cytomegalic inclusion disease, and listeriosis. Severe maternal malnutrition is most unusual in this country, though it can still occur in developing countries. Deficiency of individual vitamins (such as vitamin E) is extraordinarily rare in the mixed diet of this country, and there is no evidence of its being a substantial cause of miscarriage in women.



The number of deaths reported after illegal abortion is reducing rapidly in England and Wales. Death used to be mostly from sepsis or from renal or hepatic failure.

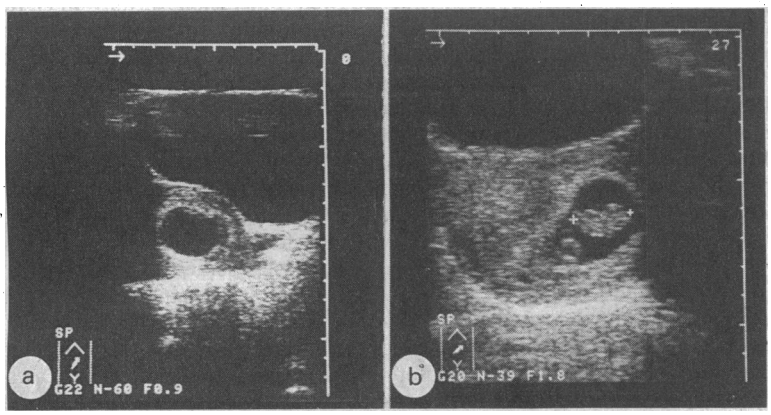
Endocrine imbalance—Diabetes and thyroid hyperfunction used to be associated with increased risks of spontaneous miscarriage. If diagnosed, both are now usually well treated and women have a good hormone balance. An insufficiency of progesterone from the corpus luteum used to be regarded as a cause of miscarriage. This is hard to prove, and most randomised trials using progestogens in early pregnancy have failed to show an improvement. If, however, the woman has faith in this treatment and had a previous successful pregnancy taking it, the general practitioner would do well to treat the psyche rather than the soma and prescribe a progestogen.

Criminal abortion is now much less common in Britain but still occurs in other countries and in populations derived from those countries. Rarely do criminal abortionists leave signs that can be spotted in the genital tract and so the woman is often treated for an incomplete miscarriage.

Presentation

A woman who is miscarrying usually presents with vaginal bleeding and may have some low abdominal pain. The bleeding is slight in a threatened miscarriage, greater amounts being present with an inevitable miscarriage. Pain with uterine contractions may be compared with dysmenorrhoea. The degree of shock usually relates to the amount of blood loss from the body.

The differential diagnosis includes ectopic pregnancy and salpingitis.



(*a*) Ultrasound scan of an empty sac in the uterus at seven weeks' gestation. This woman had a missed abortion, the embryo having been resorbed. (*b*) Ultrasound scan of a continuing pregnancy at just over seven weeks; fetal tissue is easily seen between the arrows.

Management

Threatened miscarriage—A woman with a threatened miscarriage is best removed from an active environment. If the practitioner tells her to go to bed to rest for 48 hours she may feel happier but there is no real evidence that bedrest makes any difference to the incidence of miscarriage. Some 5% of women who deliver safely report a threatened miscarriage in the same pregnancy; the effectiveness of specific treatments is difficult to assess. The avoidance of sexual intercourse is probably sensible as it might act as a local stimulus.

Inevitable miscarriage—If events progress to an inevitable miscarriage the woman needs to be admitted to hospital; oxytocin might be given if the bleeding is excessive and a flying squad may be needed. After admission an evacuation will be performed under general anaesthesia.

Complete abortion is unusual; the practitioner may see the sac containing the embryo and feel that this is complete. He would do well to remember, however, that a large amount of decidua is left behind and an evacuation may prevent the woman having a haemorrhage or infection a week or so later.

Missed abortion is usually diagnosed from the woman's symptoms of a brown discharge and a heavy, dull feeling in the pelvis; no embryonic tissue inside the gestation sac on ultrasonography confirms the diagnosis. It is wise to evacuate the uterus under anaesthesia, but this may occur on the next elective operating list unless bleeding is heavy.

Septic abortion may require the full management of severe sepsis. Endocervical swabs should be sent to the laboratory and treatment with a broad spectrum antibiotic started immediately afterwards. Central venous pressure measurement and intravenous rehydration will be required; the urinary output should be watched carefully. Evidence of disseminated intravascular coagulopathy should be assessed and the uterus evacuated once a reasonable tissue concentration of antibiotics has been achieved.

Recurrent abortion—The management of recurrent abortion is outside the scope of this series. It requires sympathetic handling by both general practitioners and specialists.

Treatment of severe septic abortion

- **Hypovolaemia**
  - Monitor—Blood pressure
    Central venous pressure
    Cardiac output
    Renal output
  - Treatment—Intravenous rehydration and maintenance
- **Infection**
  - Identify organisms
  - Treatment—Systemic
    Antibodies
    Local
    Evacuate uterus (dilatation and curettage)
    ? Remove uterus (hysterectomy)
- **Coagulation abnormalities**
- **Respiratory system**
  - Monitor—Blood gases
  - Treatment—Oxygen
    ? Ventilate
- **Anaemia and white cell deficiencies**

I thank Mr Rashmi Patel for the ultrasound pictures.

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