A FEW ELEMENTARY ASPECTS OF ABORTION

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UNTIL some years ago a distinction was made between the two terms "Abortion" and "Miscarriage," the former being employed when the ovum was expelled before the sixteenth week, and the latter where it was expelled between the sixteenth and twenty-eighth week. This distinction has now been given up and the term abortion is used generally, except by the lay public who still prefer "Miscarriage" or "Mishap."

Abortion then is defined as an expulsion of the ovum before the viable age, i.e. twenty-eight weeks. Where the fœtus is expelled after this time, but before full term, this is known as premature labour.

FREQUENCY

It is impossible to estimate accurately the occurrence of abortion, as a very large number of early abortions go unrecognized by the patient or the doctor, being considered as a delayed menstrual period, but it is generally thought that about one in every five to eight pregnancies end in abortion.

ÆTIOLOGY

Extremely early abortions are for the most part due to the unsatisfactory embedding of the ovum which may be due to faults in the endometrium or the ovum. It is thought that the endometrium is sometimes at fault because of disease, and also that it is not exactly in the most suitable condition as regards the menstrual cycle for a satisfactory embedding.

Repeated coitus should be considered as an important factor in young married women. The unsatisfactory embedding may also be due to faults in the fertilized ovum and trophoblast, resulting in the early death of the ovum.

The causes which produce the ordinary abortions met with in practice are as follows:

(*a*) *Poisons.*—Excluding very early abortions, toxæmia associated with faulty metabolism and excretion occurs very much earlier than is generally supposed, and is thought to be one of the commonest causes of abortion. Less common are syphilis and the metallic poisons such as lead and mercury.

(*b*) *Diseases of the Reproductive System.*—The most important local lesions in the reproductive organs are endometritis, and metritis, fibroid tumours and retroversion of the uterus. Endometritis and metritis favour abortion because the inflammatory condition of the uterine wall interferes with the embedding and growth of the ovum. Retroversion also causes congestion of the uterus.

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(*c*) *Diseases of Systems other than the Reproductive One.*—(i) Of these the most important are disorders of the excretory and digestive systems, dysentery, enteritis, etc.

(ii) Disturbances in the nervous system, such as a severe fright or extreme emotion, or graver diseases may be causation factors.

(iii) Of the vascular and respiratory systems, chronic valvular disease, chronic bronchitis, etc., may favour abortion.

(iv) Virus diseases, measles especially, is now thought to be a contributory cause.

(*d*) *Diet Deficiency.*—Experimental work upon the effect of dietary factors in the causation of sterility, and the discovery of the reproductive vitamin E by Evans have suggested that defective diet may so affect the vitality of the germ cells that the ovum may die at an early stage of development.

(*e*) *Endocrine Disturbances.*—The majority of these cases are probably accounted for under one of the headings: Genetic or Endocrine.

How important the genetic factor may be is difficult to say. That it plays a part in the ætiology of the condition is certain. For instance it is known that the instance of male fœtuses aborted is appreciably higher than that of female fœtuses. In some cases there seems to be a genetic incompatibility between paternal and maternal chromosomes, for it is not uncommon to find a woman who has had children by one husband but who habitually aborts with another. The endocrine factor is a deficiency of progesterone secretion. At a variable time after nidation of the ovum the chorionic villi take over the elaboration of progesterone, and the corpus luteum of pregnancy gradually fades away; usually this change over is smoothly accomplished, but it may on occasions lead to a temporary deficiency of progesterone secretion.

(*f*) *Accidents, Falls and Injuries.*—Accidents, falls, and even minor injuries may be sufficient to cause abortion.

(*g*) *Criminal Abortion.*—An interesting article appeared in the *Lancet* some time ago dealing with the many and assorted methods used for criminal abortion. In the article it was stated that some 110,000 to 150,000 abortions take place every year in England and Wales, and probably at least 40 per cent of these are induced unlawfully and without proper medical indication. The incidence is difficult to assess owing to the natural reticence of both women and doctors to report such matters, when they have no duty to do so and can see no advantage in it, but if this conservative figure is accepted, it follows that there are 300 to 400 criminal abortions in England and Wales every day.

It goes on to say that apart from the substantial loss to the population, there is far more grave and lasting harm to fertile women.

The premature termination of a pregnancy can cause infinitely more lasting harm than can birth at, or near, term for it takes place without the advantage of choice of place or time and it lacks skilled attention, surgical cleanliness, and after-care. Only too often it is casual, or planned for mere domestic convenience and carried out in secrecy, for gain, by persons uninterested in the ultimate health of the wretched subject.

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Symptoms and Treatment of the Different Varieties of Abortion

Abortion usually occurs in the second or third month and is more prone to happen at a time that would have been a menstrual period had no pregnancy existed.

A periodic disturbance is said to exist even during pregnancy. There are three main symptoms of Abortion:

(a) Pain. (b) Hæmorrhage. (c) Dilatation of the cervix.

The pain varies in severity with the duration of the pregnancy, for instance in early pregnancies it may be very slight, but in some cases it is severe, and generally succeeds the second symptom—hæmorrhage, which is due to the detachment of the ovum. The amount of hæmorrhage also may vary considerably and in many cases it may be extreme, the patient becoming blanched from loss of blood, and it is accompanied by the usual signs of shock.

The dilatation of the cervix occurs sooner or later if the ovum is expelled, but if the ovum is retained in the uterus practically no dilatation occurs.

In the early months of pregnancy the whole ovum may be expelled intact but, owing to the fact that at this stage fusion between the decidua reflexa or capsularis and the decidua vera is not complete, it often happens that the ovum with its villi is expelled and the decidua vera left behind. Later, after fusion of the layers of the decidua the whole mass may be expelled intact, although quite frequently this is not the case. When abortion occurs after formation of the placenta, the membranes rupture and the fœtus is expelled followed occasionally by the placenta. More commonly, however, the placenta is retained in whole, or part, and has to be removed manually.

Classification of the Varieties of Abortion

(1) Threatened Abortion.
(2) Inevitable—(a) Complete. (b) Incomplete. (c) Missed.
(3) Tubal Abortion.

Threatened Abortion

Sometimes pain and hæmorrhage occur during early pregnancy without leading to dilatation of the cervix. Care should be taken in not attributing these symptoms in all cases to threatened abortion, as they might quite easily result from a number of other causes, for instance: Cervical polypus or malignant growths, and even where the bleeding can easily be traced to the uterine cavity it does not always mean that abortion will ensue, as a good deal of hæmorrhage can occur in early pregnancy without causing detachment of the ovum.

In practice it is not always easy to decide in the early stages whether a case of abortion is threatened or inevitable, but I am of the opinion that provided there is little or no dilatation of the cervix and the hæmorrhage is not severe, expectant treatment is the correct procedure.

In the *B.M.J.* of April 10, 1948, an article appeared by Bender of Liverpool on The Guterman Test in threatened abortion. In this article he stated "In a recent paper experimental work was reviewed which suggested that the

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administration of progesterone in the treatment of threatened abortion is indicated where there is a natural deficiency of the hormone but that its use in the absence of progesterone deficiency is not only pointless but possibly increases the chances of the abortion progressing. This is because one of the actions of the hormone is to increase the amplitude of uterine contractions.

Accordingly before starting therapy in these cases, it is desirable to divide them into two categories. Those accompanied by progesterone deficiency and those not so accompanied. This differentiation can be made by estimating the level of urinary pregnanediol excretion, which level is held to provide a reliable index of progesterone metabolism.

"The Guterman (pregnanediol excretion) test, although less exact than lengthier methods of pregnanediol assay, has been found eminently suitable for this purpose."

He goes on to say that investigations of 100 cases diagnosed clinically as threatened abortion were made by means of the Guterman test. In 75 the clinical diagnosis was correct. In the remainder a comparison of the results of simultaneously performed Guterman and Aschheim-Zondek tests made or confirmed the correct diagnosis. The Guterman test, although not as exact as lengthier methods, is said to be accurate enough to differentiate those cases of true threatened abortion which are associated with evidence of progesterone failure from those which are not. In the former case good results can be expected from progesterone therapy, while in the latter type such treatment may accelerate the course of abortion.

The results of this investigation suggest that the abortion rate in cases of threatened abortion where the fœtus is still alive can be reduced by about 25 per cent by selecting for progesterone therapy only those cases in which the Guterman test is negative or weakly positive.

Inevitable Abortion

(*a*) *Complete.*—When the pains are regular and intermittent and the internal os is open, with the ovum detached and lying in the cervix and the liquor amnii has escaped, the abortion is said to be inevitable.

It is sometimes possible to recognize uterine contractions by palpation and this forms a useful sign, for in threatened abortion the uterus does not contract sufficiently to be recognizable.

(*b*) *Incomplete.*—This term implies that some portion of the placenta or decidua has been retained in the uterus. Continuance of bleeding, which in some cases may be very severe, and also absence of the expected involution of the uterus are the main symptoms, to these may be added sepsis, if the cavity of the uterus has not been kept sterile.

(*c*) *Missed.*—In cases of missed abortion the ovum dies and is retained in the uterus. Occasionally this is preceded by the symptoms of a threatened abortion. The ovum may be retained for many months, or on the other hand it may not be expelled until what would have been " full time " had pregnancy

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run a normal course. The ovum presents a very typical appearance and it is known as a carneous, or fleshy mole. Numerous hæmorrhages occur into the decidua and chorium, and these raise the amnion in an irregular manner, hence the terms applied to the condition.

In the amnionic cavity the minute embryo may be observed but in many cases it has entirely disappeared.

The diagnosis of "missed abortion" is often very difficult and in many cases can only be reached by waiting and observing the patient. If the uterus remains the same size and the subjective symptoms of pregnancy disappear, then it may be concluded that the ovum is dead. Following the death of the ovum the breasts tend to become more relaxed. If the uterus continues to increase in size it is probable that the ovum is alive and that the pregnancy is continuing normally.

Tubal Abortion

(*a*) *Before Rupture.*—As this condition usually occurs very early, there are practically no signs or symptoms. Amenorrhœa will probably be present but on the other hand a blood-stained discharge sometimes appears and can be mistaken for a delayed period. Pain is generally present in the lower abdomen, and on vaginal examination the uterus may appear to be slightly enlarged. In some cases the enlarged tube may be palpated.

(*b*) *After Rupture.*—The patient complains of a sudden acute pain in the lower abdomen. If the hæmorrhage is severe there will be dullness in the iliac fossa and general rigidity of the abdomen with a limitation of movement on respiration. Faintness and vomiting, with a subnormal temperature and rapid pulse will also be present. Examination *per vagina* will reveal a slight hæmorrhage and great pain will be experienced by the patient, especially when the vaginal fornices are examined. A doughy mass may be felt in the posterior fornix and the cervix will be softened and the uterus enlarged.

Differential Diagnosis

There are two other conditions which resemble abortion inasmuch as they are characterized by the expulsion of a body from the uterus with hæmorrhage and pain; they are: (1) Tubal gestation and (2) intra-uterine polypus.

(1) The structure of the decidual membrane is identical in both uterine and extra-uterine pregnancy and therefore uterine abortion cannot be diagnosed unless structures recognizable as chorionic or fœtal have been expelled from the uterus. An important clinical distinction is, that in abortion pain is slight and hæmorrhage severe, whereas in tubal gestation pain is very severe and hæmorrhage slight.

(2) An intra-uterine polypus sometimes protrudes through the cervix. Pain, hæmorrhage, enlargement of the uterus, dilatation of the internal os with a soft bulging swelling in the cervical canal could easily be mistaken for an inevitable abortion. The usual signs and symptoms of pregnancy would, however, be absent, and there would in all probability be no history of amenorrhœa.

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TREATMENT

Prophylactic treatment is of great importance. An effort should therefore be made in all cases to try and discover the cause of an abortion, this is especially so in cases of habitual abortion. The urine should be examined. The blood pressure taken, a Wassermann test applied and a thorough clinical examination of the patient should be undertaken including a pelvic examination after the patient has recovered from an abortion. In cases of habitual abortion particular attention should be paid to the patient's diet (deficiency of vitamin E).

The husband should be examined, to ascertain whether there is any evidence of defective spermatogenesis, if present it should be treated not only by attention to the general health and hygiene but by the administration of testicular and gonadotrophic hormones and vitamin E concentrate.

The patient should be told, that if she becomes pregnant she should report as early as possible for advice and treatment.

She should be given vitamin E and hormone treatment, of the latter, progesterone and gonadotrophic luteinizing hormone should be used. Should there be any suspicion of hypothyroidism, thyroid extract should be given in addition.

Careful management at the time when the menstrual period would normally become due is also essential and the patient should therefore be instructed to remain in bed for three or four days during this time. Cases of backward displacement of the uterus which are discovered after pregnancy has taken place should be left alone if unaccompanied by symptoms.

Threatened Abortion.—The patient should be confined to bed and all forms of exertion and excitement suppressed by the use of sedatives. A hypodermic injection of a quarter of a grain of morphia should be given and repeated at intervals if necessary.

Potassium bromide and chloral are also useful especially if the patient is of a nervous disposition.

Progesterone therapy.—I am of the opinion that progesterone therapy is worth a trial in all cases of threatened abortion. Injections of up to 10 mg. doses should be given daily until bleeding ceases or until the abortion becomes inevitable.

I have no statistics to show that this hormone is beneficial in these cases, but I have a general impression that more cases of threatened abortion go to term now than did before the arrival of this hormone on the market.

Inevitable Abortion.—In some cases this process will proceed naturally and terminate without any interference and with a favourable result.

No treatment is required beyond the administration of ergometrine to stimulate the uterus with a view to preventing retention of parts of the decidua or ovum and ensuring proper retraction afterwards.

It is very important that instructions are given to save all blood clot for inspection as the uterine contents may be discharged piecemeal.

If the hæmorrhage continues it will probably mean that some products of conception are retained and it will then be necessary to remove these in the most

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conservative manner, the choice of procedure depending upon the consistency and degree of dilatation of the cervix. If it is sufficiently patulous to admit a finger, this should be introduced into the uterus and the ovum peeled off from the uterine wall and extracted. If this cannot be effected, the ovum should be broken up by the finger and extracted with a placental or ovum forceps.

If, however, the cervix is soft, but not sufficiently dilated to permit the introduction of a finger, dilatation may be effected by means of Hegar's dilators.

If the hæmorrhage persists after the uterus has been completely emptied of its contents, it may occasionally be necessary in the case of an emergency to plug the uterine cavity with a long piece of 1 inch or 2 inch sterile gauze, the vagina should be loosely plugged. Finally a small dose of ergometrine should be administered by intramuscular injection.

The gauze must be removed in twelve hours as there should be no further risk of hæmorrhage after that time.

Missed Abortion.—Once the diagnosis is established the cervix should be dilated and the uterine contents cleared out.

The alternative plan is to do nothing active but to await spontaneous expulsion of the mole which is bound to occur sooner or later; the disadvantages of this are that the patient is left in a state of uncertainty, and abortion of the mole may be accompanied by serious hæmorrhage.

Œstrogen may be tried with a view to stimulating the uterine muscles to contract and expel the mole. Large doses should be given, 10–15 mg. of stilbœstrol every waking hour may be administered for three days, before it is abandoned in favour of a surgical evacuation of the uterus.

Tubal Abortion.—Before Rupture: Diagnosis in the early stages is extremely difficult but should it be confirmed, removal of the affected tube should be undertaken without delay.

After Rupture: Where there has been a severe intra-abdominal hæmorrhage it will probably be necessary to treat the patient for shock before taking her to the theatre, a careful watch must be kept on the pulse-rate to ascertain that no fresh hæmorrhage is occurring. It will almost certainly be necessary to transfuse the patient either during or after the operation. The operation consists of a laparotomy, the removal of the blood clot from the abdominal cavity and a resection of the affected tube.

Septic Abortion: In dealing with cases of septic abortion the uterus is always soft and friable, and if undue instrumental interference is undertaken it may very easily rupture.

If the os is sufficiently dilated, gentle exploration of the uterine cavity may be undertaken with an ovum forceps, but if it is possible to extract the uterine contents with a finger it is much safer to do so. It is essential that chemotherapy should be started as early as possible.

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