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Abortion

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Abortion is not only a fascinating and complex subject, it is also a very important gynaecological problem when we consider that 10% to 30% of all pregnancies end in abortion. Moreover this subject frequently involves many other disciplines besides medical e.g. legal, ethical and moral.

Definition: Abortion is synonymous with miscarriage and includes termination of any pregnancy that has not reached viability i.e. before 28th week of gestation. However, in some American Textbooks abortion only includes interruption of pregnancies before the 20th week.

Incidence: This is difficult to ascertain with any degree of accuracy. Figures vary from 10% to 30% of all pregnancies. In certain areas as high as 50% of these are thought to be due to criminal interference.

Etiology: This may be conveniently divided into

(a) Ovular or foetal causes

(b) Environmental or maternal causes.

It is a moot question as to the relative importance of either. In most cases the outcome is the interaction of both.

According to Hertig and Sheldon (1943) about 50% of early abortions (i.e. between 4 to 6 weeks) are due to abnormal embryonic development inconsistent with life; the underlying cause is perhaps lethal or sublethal genetic defects.

Spermatozoal malformation has been cited as a possible cause of habitual abortion (C.A. Joel, 1955). From this same study it has been shown that sperm counts showing malformed sperms of over 50% imply infertility.

Environmental or maternal causes may be—

(1) Endocrinal

(2) Local anatomical

(3) Psychical

(4) Others.

Endocrinal factors as a cause of abortion have been widely recognised and well documented. A pointer to this as a possible etiology is the history of long infertility and menstrual disturbance.

There is a synergism between chorionic gonadotrophin secretion by the trophoblast and progesterone-oestrogen secretion by the ovary. Hence when the ovarian function is poor, a vicious cycle is set up. The function of the hypothalamus-pituitary-ovarian system is reflected in the endometrium. By studying the pathological types of previous abortions Jones & Delfs were able to deduce the endocrine factor responsible. Useful prognostic information may also be obtained by the assay of Human Chorionic gonadotrophin and or pregnanediol levels, provided one keeps in mind the fact that a decreasing levels in H.C.G. or pregnanediol may be either the cause or effect of abortion!

Other endocrine disorders having a causal relationship with abortion are

(1) Hypothyroidism

(2) Hyperandrogenism; and

(3) Prediabetic state.

The incidence of *uterine abnormalities* is greater than one would suspect, and increases sharply when one looks out for them. Incompetent cervical os is now a well established cause of abortion in the middle trimester. This may be traumatic, developmental or functional in origin. Adnexal and pelvic pathology can also cause abortion.

By means of a variety of *psychological* tests, definitely identifiable personality characteristics are evident in a group of Habitual Aborters with no discernible organic cause. Psychotherapy in such a group has produced good result in 84% as

compared to 20% in the control (C. Tupper et R. J. Weil, 1962).

Other environmental causes of abortions are:—

(1) Rh incompatibility
(2) Blood group incompatibility (Wren & Vos, 1961).
(3) Infection e.g. toxoplasmosis (Weinman, 1960) listeriosis (Rappaport et al, 1960), syphilis, brucellosis.
(4) Nutritional deficiencies.
(5) Maternal diseases e.g. nephropathies, hepatopathies, cardiopathies.
(6) Histaminase deficiency (Vignes et al, 1961).
(7) Hypersensitivity.
(8) Trauma—including the largest single group viz. induced abortion.

Clinical Types: A convenient classification is the following:

(a) Spontaneous Abortion—
  (i) Threatened
  (ii) Inevitable
  (iii) Incomplete
  (iv) Missed
  (v) Septic.

(b) Induced Abortion—
  (i) Therapeutic, 'Legal'
  (ii) Criminal.

The clinical features of the above varieties are too familiar to you that I shall not belabour them here except for the last type.

Criminal Abortion: In certain centres this is responsible for as much as 50% of all abortions. Its importance is reflected not only by the increasing incidence, but also because the majority (95%) will not admit it, and it is still responsible for a not inconsiderable number of maternal mortality which often occurs suddenly.

The diagnosis of criminal abortion is usually derived at from the evasive or fictitious stories she tells, from the type of patient and her social circumstances, from the great parity and sometimes from a previous similar history. Fever is usually present and local injury may be detected. The differential diagnosis from a disturbed ectopic pregnancy can sometimes be very difficult, especially when such a patient gives a history of a criminal interference. This actually happened in one of my cases. Laparotomy was decided upon because of increasing anaemia. At operation, a left tubal abortion was discovered.

In septic abortion the shock is usually out of proportion to the blood loss. This is due to peripheral vascular collapse usually from B. Coli toxin —the so-called Generalised Shwartzman Reaction (McCally et Vasicka, 1962).

In Mondor's Syndrome, the triad of jaundice, haemoglobinaemia and haemoglobinuria is the result of haemolysis which is due to the circulating Cl. Welchii toxin.

These two conditions are usually fatal unless vigorous therapy is instituted early.

Mechanism of Abortion: The generally agreed sequelae in abortion are first, decidual necrosis and haemorrhage, next, the deterioration of placental function which in turn results in increasing uterine irritability and expulsion of the conceptus.

Often the above sequence follows upon foetal death.

In the very early months the attachment of the conceptus to the uterus is tenuous and abortion usually means extrusion of foetal sac and the decidua in toto, making curettage often unnecessary. Later on, up to about the 14th week gestation, some chorionic tissue is usually left adherent to the uterus. Hence it is usually wiser to do curettage before sending the patient home. After the 14th week, a normal 3rd stage is possible.

Roughly about 10% of pregnancies which experience spotting or bleeding in the first trimester ends in spontaneous abortion and another 10% experiencing similar spotting do not abort. This latter so-called "benign bleeding", however, is not so benign as we might have thought (Thompson & Lein, 1961). A number of recent articles has shown that prematurity in this group is 1½ times that of the total clinical population; the perinatal mortality is increased in both the matured and premature infants of this group. On the other hand the major foetal malformation of 1½% is no higher than the general group.

Therapeutic Abortion

This may be defined as Induced Abortion for medical indications by reputable physician following consultation with professional colleagues to

establish that the procedure is being undertaken in good faith.

The English Law states, "It may not be unlawful to interrupt pregnancy which would otherwise in medical opinion, constitute a threat to the life of the woman or which would make her a physical or mental wreck. The opinion must be honest though not necessary correct."

The paramount aim in obstetrics is the preservation of maternal life and health, and therapeutic abortion must find its sole justification in the degree to which it serves that end.

Assessment of what constitutes a threat to the life of the mother during pregnancy is subject to wide interpretation. Already induced abortion has become more prophylactic than therapeutic.

Circumstances justifying therapeutic abortion are forever changing. With the advance of medical knowledge, many previous indications are no longer tenable (Jeffcoate, T.N.A., 1960).

The most frequent indication for therapeutic abortion nowadays is nervous and mental diseases. However, psychiatrists are becoming more aware of the cases in which guilt complex which sometimes follow a therapeutic abortion more often offset any beneficial effect that might have been expected. In the extremely ill woman, the hazard imposed by the operation and anaesthesia may more than counterbalance the risk of allowing gestation to continue. The more urgent the physical indication for therapeutic abortion, the greater the contra-indication because of the hazard inherent in therapeutic abortion procedure. Eastman writes, "Looking back on all the patients who have refused therapeutic abortion, I can recall only one in whom the refusal was definitely and directly responsible for her subsequent death."

In the last 20 years, the trend in the indication for therapeutic abortion has reversed. Whereas then the indications, in descending order of importance, were renal diseases and hypertension, cardiac diseases, and nervous and mental diseases, nowadays the order is mental diseases, renal diseases and finally cardiac diseases.

The shrinking indications for therapeutic abortion is reflected in the decreasing incidence of this operation. For example at Johns Hopkins Hospital, the rate was 1 in 55 of deliveries in 1930; in 1952 the rate was 1 in 450. No doubt this is the trend in other centres too, although here in Singapore we have no statistical evidence to substantiate this.

Bibliography:

1. A. T. Hertig & W. H. Sheldon—Annals of Surgery, 117: 596, 1943.
2. C. A. Joel—Fert. & Steril., 6: 459, 1955.
3. G. E. S. Jones & E. Delfs—J. American Med. Assoc., 146: 112, 1951.
4. C. Tupper et R. J. Weil—Amer. J. Obst. & Gynec., 83: 421, 1962.
5. B. G. Wren et G. H. Vos—J. Obst. & Gynaec. Br. Comm., 64: 637, 1961.
6. D. Weinman—Fertil. and Steril., 11: 525, 1960.
7. F. Rappaport et al—Lancet 1: 1273, 1960.
8. P. Vignes et J. Carion Gynec. et Obstet., 60: 259, 1961.
9. M. McCally et A. Vasicka—Obstet. and Gynec., 19: 359, 1962.
10. J. F. Thompson et J. N. Lein—Obst. & Gynec. Survey, 16: 782, 1961.
11. T. N. A. Jeffcoate—British Medical J. 5173: 581, 1960.
12. N. J. Eastman—Obst. and Gyn Survey, 8: 219, 1953.