INTRA-UTERINE ASPIRATION

BY

BELA LORINCZ, M.D.*Gynaecologist, Hospital for Women, Ujpest, Hungary*

AND

ALBERT DAVIS, M.D., Ch.M., F.R.C.S.*Honorary Assistant Gynaecologist, The French Hospital;
Consultant Gynaecologist and Obstetrician,
London County Council*

It is obvious that direct histological examination of the endometrium is of the greatest value in the diagnosis of many gynaecological disorders, but until recently such examination has been largely negated by the inconvenience and occasional dangers inseparable from the use of the ordinary curette. To obviate these difficulties we have recently evolved a method by which small fragments of the uterine mucosa may be removed from the unanaesthetized patient in the out-patient department or the consulting-room. The method is safe and painless, and in addition to the saving of time and disability it has the advantage of being applicable to those conditions where curettage is contraindicated by the presence of a raised temperature, active adnexal inflammation, or suspected ectopic gestation.

Technique

The apparatus consists of a cannula and a suction pump. The cannula (see illustration) is a rigid tube eight inches

Diagram of the intra-uterine aspirator. A is for use in the retroverted uterus, B when it is anteverted. The aspirator contains a long fine glass tube for the admission of air, and is perforated at the uterine end by two small oval holes. The distal end passes into a bottle, which is itself evacuated by an electric suction pump.

in length, bent at 30 degrees at one end and at 90 degrees at the other. The former (uterine) end is closed, but it is perforated by two small holes measuring approximately 0.25 cm. in diameter. The other is open, and fits into the rubber stopper of a small receiving bottle. There is also a short tube attached at right angles to the main one; this is open to the air, and its purpose is to prevent the formation of a partial vacuum. Within the main tube is a much finer tube which admits air to the uterine end of the aspirator.

The difficulty caused by the varying positions of the uterus is met by the provision of two aspirators bent in opposite directions at the uterine end, one for anteversion and the other for retroversion. The diameter of the outer tube is equal to that of a No. 4 Hegar dilator, so that it may easily be passed into the multiparous uterus. In nulliparae, however, it may be necessary to dilate the cervix slightly before the instrument can be introduced.

The technique is simple. A speculum is placed in the vagina and the cervix seized with a single vulsellum. (It is unnecessary to use a special lithotomy table, and the left lateral position is usually the most satisfactory.) The vaginal cervix is carefully cleaned, and the sterilized aspirator introduced into the uterus. Gentle suction is then begun, either with a breast-pump motor or a large syringe, the aspirator being rotated continually so as to obtain tissue from several parts of the endometrium. If a glass instrument is used this tissue can be observed passing outwards along the internal tube, but if the instrument is a metal one the fragments are not seen until they drop into the formalin in the collecting bottle. The suction is continued until an amount of material adequate for microscopical examination is collected, when the cannula is gently withdrawn.

Indications

The use of the aspirator is indicated in suspected ectopic gestation, acute endometritis, tuberculosis of the endometrium, long-continued slight post-partum haemorrhage, and in the study of various endocrine disorders and their reaction to hormone therapy. In some of these conditions ordinary curettage is dangerous, and others do not warrant a surgical operation, however minor. Suction apparatus is free from both disadvantages, and though by no means always reliable the information it provides is often considerable, and occasionally of vital importance.

ECTOPIC GESTATION AND EARLY ABORTION

The differential diagnosis between ectopic gestation and early abortion with an inflammatory tubo-ovarian mass is often notoriously difficult, and it is here that aspiration may be helpful. The following cases are illustrative of its value.

Case 1.—A woman aged 39 was admitted to hospital with severe colicky pain in the hypogastrium and a history of having missed one period. Six weeks after the last period she started to bleed, and the haemorrhage had persisted since that time (one month before admission). She had previously had two full-term normal deliveries and one abortion, and had been treated medically in 1927 for a large tubo-ovarian abscess. Pelvic examination revealed a large fluctuating tumour on the right side, bulging the posterior fornix, and a provisional diagnosis was made of septic abortion with recurrence of the old abscess. The clear serum obtained by puncture of the pouch of Douglas was of little diagnostic value, and in view of the history a uterine aspiration was performed. Microscopical examination of the aspirated tissue showed definite decidual changes in the endometrium with no foetal elements, and this, in spite of some contrary points in the history and clinical signs, was sufficient indication for operation. Prompt laparotomy revealed an intact right-sided tubal pregnancy of from three to four months' duration. This was easily removed, and the patient made an uninterrupted recovery.

Case 2.—This patient, aged 33, was admitted to hospital complaining of vaginal haemorrhage, with fainting attacks, vomiting, and severe colicky pain in the lower abdomen. The last menstrual period was six weeks previously. She had had three normal full-term deliveries, the last of which had been followed by a pelvic peritonitis of six months' duration. Since that time the periods had been irregular, with a six to eight weeks interval. The patient was not otherwise ill; the colour was good, and temperature and pulse were normal. Pelvic examination revealed a normal anteverted uterus and a sausage-like tumour attached to the left cornu. Microscopical examination of the endometrial tissue obtained by aspiration showed definite decidual changes with no foetal elements, and a diagnosis of ectopic gestation was made, in

spite of the equivocal nature of the history and the menstrual anomalies. This was confirmed by immediate laparotomy, the left tube containing an intact growing ovum covered with chorionic tissue. A few drops of fresh blood were present among the intestines, and blood was also seen oozing through the fimbriated extremity.

In both of these cases the uterine aspirator proved an invaluable diagnostic adjunct. But the method is of course by no means infallible, and its incompleteness renders it particularly prone to error. It is possible, for example, for the aspirator to fail to evacuate foetal elements even when these are present in the uterus, and this happened in one of our cases.

Case 3.—The patient, aged 31, was admitted to hospital with vaginal haemorrhage and severe pain in the right lower abdomen. The last menstruation was eight weeks overdue, the periodicity being regularly 4/28, and she had been losing slightly but continuously for ten days. On examination there was some pallor, with temperature 99° and pulse 96. The uterus was soft and bulky, and a very tender indefinite mass, the size of a plum, was present in the right pelvis. The lower abdomen was generally tender and hyperaesthetic, but there was no evidence of peritonitis or of free fluid. The uterine aspirator showed endometrial decidual changes and no foetal elements, and a diagnosis of extra-uterine pregnancy was made. At operation, however, this was found to be incorrect, the condition being a subacute tubo-ovarian abscess.

The menstrual symptoms and the uterine changes in this case were evidently the result of an incomplete abortion, for subsequent curettage demonstrated the presence of small but definite foetal elements. Too much reliance on the aspirator was responsible for a probably unnecessary laparotomy, for though cure resulted from the removal of the abscess and subsequent curettage, the latter was delayed and the former might have been as adequately dealt with by medical treatment.

CASES OTHER THAN PREGNANCY

In addition there is the possibility of error due to the fact that certain conditions other than pregnancy may produce pseudo-decidual changes in the endometrium. Whitehouse has repeatedly demonstrated such "menstrual decida" in dysmenorrhoea, and it also occurs frequently in the presence of corpus luteum cysts and occasionally in normal menstruation. It is true that these changes are not identical with those occurring during the later stages of pregnancy decida formation—the individual cells, for example, are much smaller—but in the earliest period the two are often indistinguishable. The following case is illustrative of this.

Case 4.—A woman aged 33 was admitted to hospital with severe pain in the right lower abdomen of one week's duration, accompanied by slight vaginal haemorrhage and attacks of faintness. The last period was ten days overdue. She had had four normal deliveries, but developed puerperal sepsis on each occasion. The normal menstrual periodicity was 7/28. Pelvic examination revealed a soft cystic mass, the size of a tangerine orange, on the right side. The uterus was normal in size, but there was a slight trickle of blood issuing from the os. Uterine aspiration showed a decidualy modified endometrium without foetal elements, confirming the clinical diagnosis of ectopic gestation. At operation, however, the tumour was found to be an ovarian cyst.

Two possibilities may be suggested in explanation of this mistake: (a) that the cyst contained a large quantity of corpus luteum hormone, and (b) that there had been a complete abortion. The former was probably the condition present in this case, for the history and physical signs were against the latter, while the fact that the haemorrhage ceased after removal of the cyst would indi-

cate some causal relationship. The mistake was not, of course, a serious one, except for the disadvantages of an emergency operation, but it does illustrate a possibility of error inherent in the aspiration method.

The opposite state of affairs—that is, the prevention of operation—is, however, well shown by the following case.

Case 5.—A woman aged 23 was admitted to hospital with slight vaginal haemorrhage, raised temperature, and severe lower abdominal pain. The last period was one week overdue, and haemorrhage had begun a day before admission. Pelvic examination showed a soft very tender sausage-shaped tumour on the right side; the uterus was of normal size. A diagnosis of tubal pregnancy was made, but uterine aspiration revealed the presence of acute purulent endometritis. Medical measures were consequently adopted, and after treatment by rest and local applications the patient made an uninterrupted recovery, the tubo-ovarian abscess disappearing spontaneously in a very short time.

It is apparent that the function of the aspirator is primarily accessory, its value being principally that of a diagnostic aid, either positive or negative. Occasionally, however, it may reveal the presence of a previously unsuspected lesion in the endometrium.

Case 6.—A multipara aged 43 had a history of irregular haemorrhage, frequent temperature up to 100° F., and loss of weight. Pelvic examination showed a soft tender left adnexal tumour. The condition appeared almost certainly an inflammatory one, but it was necessary to eliminate the possibility of malignancy. Curettage was contraindicated, and aspiration was substituted. The material thus removed proved to be typical of tuberculous endometritis.

This case is particularly instructive in view of the equivocal nature of the symptoms of genital tuberculosis and the notorious difficulty in its clinical diagnosis. It is probable that the aspirator will prove of considerable value in suspect cases, and we have in fact recently seen two cases of phthisis where endometrial aspiration showed marked tuberculous changes, although there were no clinical symptoms whatever of uterine involvement.

REGULATION OF HORMONE THERAPY

Another and more considerable field for uterine aspiration is in the regulation of endocrine substitution therapy. The best means of observing the effect of ovarian hormone administration on the endometrium would of course be by repeated curettage, but this is obviously an undesirable and in most cases an impossible procedure. Repeated aspiration is a satisfactory substitute, and the information gained in this way is of paramount value in assessing the results of treatment. In some cases of amenorrhoea it may be difficult at first to obtain any endometrium at all by suction, but with persistence sufficient for microscopical examination can usually be withdrawn. On the other hand, the amount of mucosa which enters the suction tube after treatment with gonadotropic hormones is sometimes astonishing.

When building up the endometrium in a case of amenorrhoea it is desirable to have some idea of the patient's ovarian cycle, so that the appropriate hormone may be given at the correct time. Though there is no haemorrhagic evidence that these patients *do* pass through any cycle at all, it is clinically obvious that such is actually the case. Many patients, for example, the subjects of amenorrhoea, complain that they periodically feel the same subjective symptoms as in menstruation, although no bleeding occurs. Another example is the manner in which menopausal symptoms may be completely relieved by doses of oestrin insufficient to produce any cyclic haemorrhage. This clinical evidence has been supple-

mented by the results of aspiration, which have shown that not only can cyclic changes in the endometrium occur in amenorrhoea, but that the histological changes of the normal endometrial cycle can be provoked by hormone therapy without causing the ultimate manifestation of haemorrhage. The cause of this is obscure: either a specific agent for haemorrhage is absent or it is not present in sufficient quantity, or the various hormones involved are secreted asynchronously. However that may be, the one external manifestation of menstruation—that is, haemorrhage—is absent, and it is here that aspiration is of value in determining both the timing of the cycle and the appropriate therapeutic technique necessary for its stimulation.

STERILITY

In cases of sterility the information derived from aspiration is of value in both diagnosis and treatment: it is particularly important in determining the presence of anovular menstruation, which has been shown to be a frequent cause of the condition. The diagnosis is made by examining the endometrium just before menstruation; if the normal premenstrual changes are not present it is evident that the factor which produces them—that is, the corpus luteum—is either absent or deficient. This phenomenon of anovular menstruation is also the basis of many cases of post-menopausal cyclic haemorrhage, and here, as in sterility, a diagnostic aspiration will often elucidate the true nature of the haemorrhage and provide the index for its hormonal treatment.

Conclusions

Uterine aspiration is a simple, harmless, and effective substitute for diagnostic curettage. It may be performed in the consulting-room, requires no anaesthesia, and avoids the necessity for confinement to bed.

The method is of value in the differential diagnosis of many varied conditions, including ectopic gestation, incomplete abortion, late post-partum haemorrhage, sterility, acute endometritis, etc. It is not, however, infallible, and its findings should always be correlated with the clinical signs and symptoms. Where carcinoma is suspected, curettage should be substituted.

It is probable that the main value of aspiration lies in the diagnosis of various disorders of endocrinal origin and in the control of their treatment by hormone therapy.

The fifteenth annual report of the Ella Sachs Plotz Foundation for the advancement of scientific investigation reveals that special favour is being shown to investigators who are working in the sciences bearing on medicine and surgery without reference to other fields. Thus Dr. H. Blaschko of Cambridge is continuing, with the aid of a grant, his study of the sympathomimetic drugs and the metabolism of amines, while Dr. A. Colin Campbell of Edinburgh has been tackling various problems connected with the cerebral circulation. Professor F. Bremer of Brussels has studied the acoustic responses of the cortex, and Dr. P. Ellinger of London the physiology of the kidney with special reference to the fate of phlorhizidine derivatives. Dr. I. J. Kligler in Jerusalem has been investigating the nature of the virus causing sand-fly fever. The effects of sexual hormones and of gonadectomy on other organs are being defined by Dr. V. Korenchevsky of the Lister Institute, London, and a simple hydrocarbon with a strong oestrogenic action has been isolated and investigated by Dr. A. Schönberg of Edinburgh. Applications for research grants for the year 1939-40 must reach Dr. J. C. Aub, Collis P. Huntington Memorial Hospital, Boston, Massachusetts, by the end of March. Letters asking for aid must state definitely the qualifications of the investigator, the nature of the proposed research, the size of the grant requested, and the specific use of the money to be spent.

DIRECT INGUINAL HERNIA

BY

W. G. GILL, M.A., M.B., F.R.C.S.

*Surgical Registrar and Resident Surgical Officer,
Guy's Hospital*

The purpose of this paper is to draw attention to a type of direct hernia which is occasionally seen and which receives no attention in the standard textbooks. The only description that I have come across is by Ogilvie (1937), who says:

"While any classification of types of direct hernia is unnecessary, it is advisable to point out that a rare variety, unmentioned in textbooks, is occasionally encountered in which the posterior wall of the inguinal canal medial to the deep epigastric artery shows a small circular deficiency with firm, almost tendinous margins, through which a tubular process of peritoneum, indistinguishable on clinical examination from an indirect hernia, escapes and often emerges through the external ring. Whether such a hernia is of congenital origin, due to some trauma, or caused by a localized extraperitoneal lipoma which weakens the fibrous sheet at one spot, is undetermined."

Before reading this article I had observed independently such a hernia in a young man, and I was stimulated to keep a careful watch for others. I was rewarded, for later I had the good fortune to operate on a patient in whom not only was this type of hernia present but it had actually strangulated, producing a Richter's hernia. In a personal series of eighty herniae there have been three of this type,* and their case histories follow.

Case Reports

Case 1.—A man aged 26 was admitted in September, 1936, having had a hernia for four months. Clinically he had an indirect inguinal hernia. At operation no sac was found under the coverings of the cord; instead, there was a sac medial to the deep epigastric artery, protruding through a small circular hole in the transversalis fascia. This hole would only admit the tip of the index finger, and had a well-defined fibrous edge. The sac was about three inches long, and part of its medial wall was formed by bladder. The peritoneum stripped with ease from the bladder, and was transfixed and ligatured after returning the bladder to the abdomen. The deficiency in the transversalis fascia was closed with catgut and the inguinal canal repaired behind the cord with strips of external oblique aponeurosis. Recovery was uninterrupted.

Case 2.—A man aged 59 was admitted in March, 1937, with a strangulated hernia of six hours' duration. He had had a hernia for some time previously, and on clinical grounds seemed to have a small strangulated indirect inguinal hernia. Immediate operation was performed, and on opening the inguinal canal a sac was seen appearing above the cord from the posterior wall of the inguinal canal. It was recognized that the condition was the same as that in Case 1, and, indeed, the appearances were exactly similar, except that bladder did not form part of the sac wall. The sac contained a small knuckle of half the circumference of the ileum, being a Richter's hernia, and since it was viable the gut was returned to the abdomen. A small opening was present in the transversalis fascia, and after removing the sac this was repaired with catgut. No repair of the inguinal canal was made. Uninterrupted recovery followed.

Case 3.—A man aged 40 was admitted in September, 1938. His history was interesting. Fifteen years ago he was operated on for a left indirect inguinal hernia. There was no recurrence. Two years ago a right inguinal hernia was operated on at another hospital, and this recurred within six months. On admission he had what appeared to be a recurrent

* Since writing this article I have operated on a female with a hernia exactly similar to those described here.