AFTER-TREATMENT.

The patient will now require watchful attention for some weeks to detect and treat any of the many varied complications which may arise. The first of these is excessive distension, usually most marked in the epigastrium, with a tendency to vomit. This must be vigorously treated by turpentine enemata, two or three times a day if necessary, by the regular use of a rectal tube, and by gastric lavage if necessary. By the time the excessive distension is subsiding, there may be indications of considerable septic absorption, in the dry brown tongue, dry wounds, and fetor of the discharges. This is best treated by the administration of calomel and salines, by irrigation of the pelvic peritoneum with a weak solution of tincture of iodine decolorized by a few drops of 1 in 20 carbolic acid, and by the insertion of a little iodoform, aristol, or calomel into the septic focus.

The wounds have a great tendency to become dry, and I am convinced that wet antiseptic applications are better than dry or sterile ones, and I find iodoform gauze to be much more satisfactory than cyanide gauze. Lastly, the discharges are enticed into the dependent parts, and the drainage tubes left out in order from above downwards, those in the pelvis remaining until all foul discharge has ceased and there is no danger of the wound closing over a pelvic collection. Then it is necessary to keep an ever-watchful eye on the areas of possible remote infection. Chiefly one must watch, and if in doubt explore with a syringe, for any subphrenic or hepatic abscess, or for empyema. Though more common on the right side, left subphrenic abscess or empyema may occur after appendicitis, but left-sided remote trouble is more common after perforated gastric ulcer. There are other complications, such as thrombosis of the left femoral vein, septic pneumonia, intestinal obstruction, or ventral hernia, which will require appropriate treatment; but if all go on well the patient usually becomes markedly emaciated at first, followed during convalescence by excessive fattening, and for some time dietetic discretion is desirable, owing to the intestinal matting brought about by the peritonitis, but which is fortunately largely recovered from in the course of time.

I have ventured to bring this matter before you as one of extreme surgical importance. Statistics cannot convey the same solid convictions as experience; but you have seen some of the results, and will probably agree with me that the statement that more than half of the cases of widely-generalized peritonitis can be saved is a moderate estimate.

RECENT LITERATURE.

Generalized Septic Peritonitis:

Annals of Surgery, 1906, vol. i, 231 and 314.

Ibid., 1905, vol. ii, 75 and 316.

Ibid., 1905, vol. i, 944.

BRITISH MEDICAL JOURNAL, 1907, vol. i, 1483.

Ibid., 1906, vol. i, 862.

Ibid., 1905, vol. ii, 1116.

Pneumococcal Peritonitis:

Annals of Surgery, 1904, vol. ii, 698.

Jensen: *Archiv für klinische Chirurgie*, 1903, vol. lxx, 91.

Von Brüns: *Beiträge zur klinische Chirurgie*, 1903, vol. xxix, 57.

Puerperal Peritonitis:

Annals of Surgery, 1907, vol. i, 203.

THE DETERMINANTS OF ABORTION AND
HOW TO COMBAT THEM.*

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BEFORE discussing those conditions which tend to cause abortion it is imperative that we should have some clear notion of the meaning of this term, and as it is practically impossible for a human fetus of less than twenty-eight weeks to maintain an independent existence, I define abortion as the act whereby an immature and non-viable product of conception is dislodged from the maternal body. It is clearly a uterine phenomenon. A child expelled from the uterus at any time after the twenty-eighth week of gestation may be reared; the birth of such will not at present concern us.

In accepting this definition it behoves us to note in passing the somewhat injudicious and misleading use of such expressions as *tubal abortion* and *missed abortion*. By the latter it has been customary to designate those cases

in which the product of conception, perishing as a rule at an early stage of its existence, is not forthwith expelled from the uterus, but continues its sojourn in this organ for weeks, or even months, after the time that we naturally looked for its expulsion. The abortion is unduly delayed, but it will most assuredly be effected, and such a phenomenon should not be designated a missed, but merely a postponed, abortion. Not infrequently the fertilized ovum becomes arrested in the Fallopian tube and proceeds to develop therein. Lodged here, the oöperm is always seriously handicapped and most disadvantageously circumstanced. With a keen struggle it occasionally attains maturity, but more usually it perishes at an early stage of its existence, and as no provision is made for its natural escape from the mother's body it may for an indefinite time remain concealed therein and be to all concerned a missed abortion. If, again, the fetus should chance to arrive at maturity outside the uterus, delivery cannot be effected except by surgical intervention, and veritably this constitutes a case of missed labour. "Tubal abortion" is not, and never can be, a commendable designation, since it is only available for use after the abdominal cavity has been opened, and even then it may seldom, if ever, be truly applicable.

Until, comparatively speaking, recently, our knowledge of oölogy was very meagre, but now it has been satisfactorily demonstrated that the ova are corpuscles derived from the superficial germ epithelium, and that they become embedded in the substance of the ovary by a process of involution of the primitive germ mass. The nucleus of a corpuscle swells out, and constitutes the germinal vesicle with its contained nucleolus or germinal spot. The cytoplasm around the nucleus increases more or less markedly in amount and forms the yolk, whilst the peripheral portion of the yolk becomes differentiated into a cell wall, the zona pellucida or vitelline membrane. With the age of the ovum this membrane becomes more and more dense and resistant. The Graafian follicle is a vascular capsule formed by the connective tissue stroma of the ovary. In its early days it is lined by a single, but afterwards by two or more, layers of cells. These cells, which are derivatives of the connective tissue corpuscles, constitute the membrana granulosa, and secrete a fluid which accumulates and determines eventually the rupture of the Graafian follicle. In the human female more especially the escape of the ovum from the ovary depends almost entirely upon the activity of these cells. At the time of dehiscence the fimbriated extremity of the Fallopian tube is guided to and grasps the ovary at the seat of rupture, [and thus the ovum is conveyed to the uterus.

It is not yet agreed whether the menstrual discharge is, as I maintain, a secretory product, or, as is usually believed, an outpouring of blood from capillaries the continuity of which has been broken up by a more or less extensive destruction of the uterine mucosa, and the relationship of this phenomenon to ovulation is as perplexing as ever. Undoubtedly the two phenomena are correlated, but ovulation may occur independently of menstruation, and the former cannot in any sense be considered the cause of the latter. During lactation, and whilst menstruation is thereby held in abeyance, conception may and does occasionally take place, and again, superfetation may occur during the evolution of an ectopic pregnancy. This happened recently in a case under my care; the second fertilized ovum had passed by the undisturbed tube to the uterus, and was developing therein.

In estimating the normal duration of gestation in the human female, or the stage of pregnancy reached in any given case, we are accustomed to make our reckoning from the date of the cessation of the last menstrual period. In accepting this dogma we are naturally induced to ask whether the ovum with which we are immediately concerned belonged to the menstrual period from which we date our reckoning or to that which in the ordinary course of events would have succeeded this. On this point we are not yet agreed, but after a most careful scrutiny of clinical facts, I have come to the conclusion that the ovum corresponding to a past menstrual period is already too mature to respond to the influences of a spermatozoon. For the fulfilment of fertilization the ovum must not only attract the spermatozoa at a distance, but must on the near approach of one of these bodies throw out a cone-like process, and through this so called core of attraction

* Read before the Walthamstow Division of the British Medical Association.

coalition and fusion of the germ and sperm elements are effected. If the ovum is too mature, then the vitelline membrane is so dense and unimpressible that the necessary cone of attraction cannot form, and fertilization is therefore impossible. In the case of the hen it is well known that if the eight or ten eggs laid consecutively after one copulation are hatched there is every prospect of five or six producing chicks. The ova of these eight or ten eggs were no doubt all practically exposed at the same time to the spermatic influence, but it is more than probable that they were not all equally responsive, and from analogy we are justified in assuming that the more mature ova were less attractive to the spermatozoa and less impressible than those which were younger. Again, the strict Jewess is, and invariably has been, as fertile as her Gentile sister, even although the observances of the former are such as to preclude her from indulging in sexual intercourse until the eighth day after the cessation of menstruation, the day on which ablution may be practised. Under such circumstances it is impossible for us to believe that the ovum belonging to a past menstrual period could ever be fecundated, and we are compelled to admit that quite independently of menstruation dehiscence of an ovum may be determined. If this be not so, then the normal duration of gestation in the case of the strict Jewess must always be fourteen days or thereabouts longer than in a Gentile woman. Moreover, the uterus, after displaying its usual periodic function, gradually and probably in three or four days regains its quiescent state, but until equilibrium is again restored the organ is incapacitated for meeting the requirements of a fertilized ovum, and if by chance such should reach the cavity of the uterus, it is unlikely that it will be detained therein. During menstruation and the three or four days preceding and succeeding this phenomenon, the uterus is already dominated by a physiological influence, and it is unable to respond to the stimulus of an active oöperm. It is also more than probable that during these same days the correlated ovum is irresponsive, and that fertilization is thereby rendered impossible.

When conception does occur menstruation is thereafter usually held in abeyance, and although the ovum which is fertilized is not, as is generally believed, that belonging to a past menstruation, yet, on clinical evidence, we are justified in reckoning the duration of pregnancy in any given case from the date of the cessation of this menstrual period. Of the existence of an ordinary uterine pregnancy we are seldom suspicious until or unless a menstrual period has been missed, and this suspicion cannot be substantiated by physical examination until about fourteen days later. The egg which contains a human embryo of twenty-eight days is rather less than 1 in. in diameter, and prior to this its presence in the uterus causes no appreciable enlargement. About this time, however, if a satisfactory bimanual examination can be made, the experienced observer is, as a rule, able to detect physical signs which he is accustomed to associate with those indicative of early utero-gestation. If fecundation occurred most usually just before a menstrual period, it is very evident that we could seldom diagnose the existence of a uterine pregnancy until two menstrual periods had been missed. Again, in operating upon early cases of tubal gestation with no history of amenorrhoea, we find often abundant proof that impregnation must have taken place five or seven days after the completion of an ordinary menstruation. In my opinion, therefore, it is not the ovum of a past menstrual period but a younger and more readily responsive ovum which is invariably fertilized, and I am further of opinion that the extrusion of such from the ovary is determined largely, if not entirely, by the mere presence of vigorous spermatozoa in the female genital tract. A woman without experiencing any sexual feeling may become pregnant, and conception has resulted not only in animals but in the human female when, with due care, seminal fluid has been deposited in the genital canal from a syringe. Towards the spermatozoa the ovum should display a positive chemiotaxis, and this it is which determines the coalition and fusion of these elements.

Let me recall some of the changes which a healthy ovum placed under the most advantageous circumstances should evince both before and after fertilization. At the outset we must remember that we are concerned with an organic

mass which is the product of two vital bodies, one of which is derived from a male and the other from a female parent, and that this product may be expelled from the uterus before it has arrived at maturity, in consequence, it may be, of some physico-chemical disturbance, attributable either to the sperm or the germ element. Not infrequently it happens that an ovum which is not quite healthy becomes fecundated, and what is true of the ovum is likewise true of the spermatozoon, and this element, too, although fit for fertilization, may nevertheless be in a diseased condition. The hydatid mole may be due to some aberration of this kind. In order that the process of ontogenetic differentiation may proceed uninterruptedly and be completed, the segmentation nucleus must not contain merely germ plasma, but a germ plasma so endowed that it will not fail in its purpose. If the quantity is too rapidly exhausted or the quality is not of a certain standard then embryonic development may cease at any time, and sooner or later thereafter the immature or disordered product of conception will be dislodged. In some of the *Lepidoptera* which reproduce by parthenogenesis we witness a phenomenon of this kind, as it often happens that all the eggs laid by an unfertilized female do not develop. When the eggs which have failed to produce young are examined we may note that development has not in all been arrested at the same stage; the impulse to development was imparted, but the power to complete it was wanting. It is very evident, therefore, that the growth of nuclear substance, which is neither unlimited nor uncontrolled, is regulated by physico-chemical influences of an intrinsic as well as an extrinsic nature, and that although segmentation has been begun, it nevertheless does not follow that it will proceed uninterruptedly.

The mature human ovum is a minute piece of protoplasm about $\frac{1}{16}$ in. in diameter. When a spermatozoon approaches a young and vigorous egg the surface nearest this sperm element becomes elevated and forms a small cone, and at this spot the spermatozoon coalesces with and is eventually drawn into the ovum. No such cone of attraction is formed unless the germ and sperm elements have an affinity for and act and react upon each other. As soon, however, as contact is effected, this ovum is thereafter insensitive to, and is incapable of being influenced by, other spermatozoa, no matter how near they may be, and nuclear division commences immediately. One spermatozoon only is necessary for fertilization, but it is quite possible that two spermatozoa may occasionally run the race equally and reach the cone simultaneously, and thus two fetuses in one amniotic sac may be accounted for, but it is generally alleged that fusion of an ovum with more than one spermatozoon results in the production of a monster.

The fertilized ovum before it arrives in the uterus becomes possessed of a membrane—the chorion—and the entire surface of this membrane is furnished with processes or villi. During the first three weeks these bodies are non-vascular, but towards the end of the third week of pregnancy the allantois rapidly develops, and thrusts its blood vessels into all the villous processes of the chorion, and the ovum now becomes possessed of a universal placenta. Through the agency of these villi in their non-vascular as well as their vascular condition, the embryo during the first six weeks of its existence derives its nourishment from the uterus by osmosis, and it is by osmotaxis alone that the oöperm in its early days is not only detained but retained in the uterus. There exists neither a decidua reflexa nor a decidua capsularis.

About the seventh week of pregnancy the chorion is destined to undergo a further most remarkable change, whereby the universal placenta becomes superseded by one of a discoid form. This transformation entails the annihilation of about two-thirds of the villous processes of the chorion, whilst the remaining third, being those destined to participate in the evolution of the true placenta, are stimulated to greater activity and increased growth. As the metabolism of the embryo can no longer be effected by osmosis alone, chemiotaxis now comes into play, and henceforward the development and growth of the fetus is dependent more upon the chemiotactic than the osmotactic irritability of the placenta.

Wherever the gestation sac of a full-time ectopic pregnancy may be located, the placenta evolved under such disadvantageous circumstances is not essentially

different from that formed normally in the uterus, and we are justified in believing that the endometrium is not of itself such an all-important structure in the development of an ordinary pregnancy. To the direct stimulus of a vital oöperm the uterus in its entirety responds in a very definite and specific manner. The vascularity of the organ is markedly increased, and the nerve as well as the muscular energy is greatly augmented, whilst the organ as a whole becomes enormously enlarged. Reactionary changes similarly induced in other structures—to wit, the Fallopian tube or ovary—are of a pathological rather than a physiological order. After a full-time parturition the uterus by a process of dissolution will in five or six weeks return to its original state, and time after time the evolutionary and dissolutionary changes consequent upon gestation and parturition may be displayed by the uterus without derangement of this organ resulting therefrom. On the other hand, the structure which once harbours vicariously an oöperm becomes thereby irreparably damaged.

The villous processes of the chorion by osmotropism and chemiotropism transit to and from the embryo the products of metabolism. The uterus in turn must respond efficiently to these irritabilities—that is, the fetal and maternal structures must act and react harmoniously upon each other. If, for example, when the time arrives for the true placental villi to be differentiated from those which must cease to function the atrophic process instead of being restricted to the usual two-thirds of the chorionic invades the placental area also, then sooner or later the embryo perishes, and forthwith the correlated changes in the uterus become modified. Hyperatrophy of the chorionic villi is a cause of postponed or missed abortion. We witness a parallel phenomenon in superinvolution of the uterus after parturition. Here the dissolutionary changes are not arrested when they should be, and, transcending the usual amount, they produce atrophy of the organ. All the true placental villi are not equally endowed; those located at the periphery or circumference of the disc are less vigorous and active than those occupying a more central position. For this reason the placenta is thicker in the centre than at the circumference. When, therefore, there is a disposition to an imperfect implantation of the villi, or a tendency for the already formed placenta to recede from the uterine wall, it is towards the periphery of the disc that in the first instance this untoward event is most likely to occur.

From intrinsic and obscure causes on the part of the oöperm the developmental energy of this body may at any time, and more especially during the early days, become exhausted, and under such circumstances the uterus, unless inhibited in some remarkable manner—as happens in cases of postponed abortion—will not long continue in a transitional state, but will tend to rid itself speedily of its contents and revert as quickly as possible to its quiescent state. Concerning those innate conditions of the germ and sperm elements which may be accountable for the evolutionary power of the oöperm giving out before development is completed we know practically nothing. Syphilis may be a factor, but in my opinion this as a cause of intrauterine death is greatly overrated. Some seem to conclude that if in a case of habitual abortion potassium iodide is administered and the fetus is carried to maturity syphilis must have been the deleterious agent. To reason thus is hardly permissible. It would be if it were proven that potassium iodide could not possibly be of service except where there was a syphilitic influence or taint. The relationship of cause and effect is not always easy to substantiate, and in cases of this kind we must not overlook the fact that potassium is a very important element, and much of the good which results from the administration of potassium iodide may be due more to the base than acid. Besides potassium, magnesium and phosphorus are also very important constituents of the germ plasma, and a deficiency of any of these may affect adversely the development and growth of the embryo. Lead is a powerful protoplasmic poison, and through the germ and sperm elements, as well as by its action upon the uterine tissues, this metal may be a determinant of abortion.

Lodged in the uterus, a developing ovum arouses the activity of the whole organ, but in addition there is a well-marked local response, which is limited to a definite area of the uterine mucosa, and which implicates more

especially the capillary vessels contained therein. This, the decidua serotinal area, corresponds in extent with and is opposite that portion of chorion the villi of which are destined to participate in the formation of the permanent placenta, and during a period of seven and a half months a coaptation of these two corresponding surfaces must be well maintained, otherwise the life of the embryo may be endangered. After the sixth week of pregnancy it is more than probable that neither the endometrium in itself nor the utricular glands play any very important part in the mere process of gestation, seeing that a thoroughly efficient placenta—one differing apparently in no respect from that evolved in the uterus—may be formed in some structure outside the uterus, provided only the maternal vessels concerned in its production maintain their integrity and supply those materials which the growing embryo requires and demands. If we view gestation merely in so far as it admits of the processes of metabolism being carried on in the fetus, we must acknowledge that the all-important and essential change in the maternal tissues is that which concerns the behaviour of the blood vessels. An effective response on the part of these is, of course, only possible if they are functionally vigorous and advantageously circumstanced.

Fibroid neoplasms in the uterus do not usually militate against the occurrence of conception, but they tend undoubtedly to hinder and interrupt the process of gestation. The further these growths are located away from the endometrium the less likely are they to exert a prejudicial influence. The endometrium which restrains a submucoid fibroid is, as a rule, ill-adapted for the evolution of such vessels and sinuses as are necessary for the formation of the placenta; consequently fibroids which encroach upon the uterine mucosa are not infrequently responsible for the existence of a state of sterility or the habitual occurrence of abortion. Of the conditions which determine the placental site we are still ignorant, and it sometimes happens that, in spite of the fact that the cavity of the uterus is occupied by a large fibroid polypus, or even a foreign body like an intrauterine stem pessary, gestation begins; and in the former case it may occasionally proceed to maturity.

A short time ago I saw, with Dr. Cook, of Store Street, a patient who three weeks previously had been delivered of a full-time child, and whose uterus was occupied by a somewhat pedunculated fibroid, which was tending to slough. This I enucleated per vaginam. But the interest attaching to the case is that three years before I had seen this same patient, with Dr. Cook, immediately after a full-time confinement, as she was thought to have inversion of the uterus; but on careful examination we decided that the physical signs were due to a fibroid polypus engaging the internal os. On this occasion we urged operation, but the patient would not then consent.

Fibroids which do not encroach upon the endometrium may provoke abortion when, instead of responding, they resist the influences of gestation and interfere with the necessary expansion of the uterus.

Under ordinary circumstances the placental chorion and the decidua serotina are not structurally continuous, the relationship is merely that of cohesion through very close contact. In so far as the embryo is concerned this is attained through the sensitivity of the chorionic processes and the hydrostatic pressure of the amniotic fluid, which begins to accumulate as early as the third week of pregnancy; the part played by the uterus depends upon the inherent tone of this organ, which should enable the uterine wall to oppose efficiently and offer a moderate amount of resistance to the irritable villi and allow at the same time of the expansion of the uterus co-ordinately with the gradually increasing ovum. If the uterine tone becomes more or less markedly impaired then the wall of the organ instead of opposing and resisting will tend to recede from the contact of the placental villi, and under such circumstances an imperfect coaptation of the fetal and maternal surfaces will probably result. The maintenance of the integrity of the rapidly enlarging serotinal vessels depends greatly upon the vital support afforded them by the uterus and the embryonic mass conjointly, and whatever tends to divorce these two structures from each other is apt to cause the badly supported vessels to rupture.

External haemorrhage is not only the most important but the most common premonitory symptom of abortion, and although it may be induced in a variety of ways,

atony of the uterus is its most frequent cause. Under such circumstances it may appear as early as the sixth week of pregnancy, about the time when the serotinal vessels begin to undergo rapid enlargement in response to the stimulation of the placental chorion. Calcium and potassium are two very important constituents of the muscular substance of the uterus, and on account of some deficiency of these or the presence of some toxic material the tone and responsive power of the organ may be so impaired that blood may be extravasated and may escape externally. When haemorrhage thus results we should endeavour if possible to reinstate the uterus by removing deleterious materials and supplying those which may be deficient, and with this object we may administer potassium iodide, calcium chloride, potassium chlorate or bicarbonate, and the like. When the muscular energy of the uterus is impaired there is often enfeeblement of the nerve energy also, and with the above we may give strychnine, arsenic, digitalis, and phosphorus in some form.

Pain is the other all-important prodromal symptom of abortion. It may be noted when the uterus, in consequence of intrinsic or extrinsic changes, does not adequately respond to and fails to expand correlatively with the developing ovum. During utero-gestation the evolutionary phenomena connected therewith involve not only the uterus and vagina but also the broad ligaments, the pelvic fasciae, and the pelvis generally, and anything which interferes unduly with the harmony of the reactionary changes in these structures may provoke abortion. Apart from the presence of fibroid neoplasms, it is sometimes the substance of the uterus itself which is at fault. The whole organ, or a part of it only, in consequence of some defective co-ordination may fail to keep pace with the requirements of the growing ovum. When inco-ordination is very marked the shape of the uterus may be anomalous, and under such circumstances it may be difficult to determine whether the product of conception is lodged in the Fallopian tube or uterus. Again, the uterine tissues themselves may be responsive enough, but they may be restrained by the remnants of an old pelvic peritonitis, by some sclerotic change in the recto-vesical fascia, or more rarely by an unduly resistant and too extensive utero-vesical pad. If the adhesions due to an attack of pelvic peritonitis are of fairly recent production, or even if old, if they contain but little connective tissue then the evolutionary changes connected with gestation may invade and so soften these pathological products that a uterus which in the unimpregnated state was somewhat anchored in the pelvis may expand *pari passu* with its contained product of conception, and this may be carried to maturity. In the same way sclerosed tissues in the pelvis may also soften, as fibroids in the substance of the uterus often do. When, however, the expansion of the pregnant uterus is unduly interfered with from any of the aforesaid causes, then the irritability of the organ is more or less markedly increased, and we must in the first instance endeavour to lessen this irritability by the administration of such remedies as hydrobromic acid, the bromides, phenazonum, conium, and, if need be, opium or morphine; but during the first eight or ten weeks of pregnancy opiates should if possible be avoided, as they lessen the sensitivity of the placental villi.

Abortion, again, not infrequently results from physical or mental shock, or a combination of both influences. During utero-gestation the uterus is in a state of unstable equilibrium, the changes proceeding in it may readily be inhibited and arrested, and the muscular activity of the organ may not only be unduly aroused, but may be reduced. Moreover the serotinal vessels are so dilated and thinned that a breach in their continuity may readily be provoked. The impressionability or sensitivity of the uterus is a very variable quantity—not only in different individuals, but even in the same individual at different times. Sometimes, when it is desired to produce abortion, the greatest difficulty may be experienced in bringing about this result, whilst at other times it may be difficult to prevent abortion recurring habitually. When the pregnant uterus is adversely affected by shock, physical or mental, the evidences of any untoward disturbance may be revealed at once, but in the majority of cases there is a latent period, a period varying from one or two hours to four or five days, during which the patient is unaware that any

prejudicial influence is at work. After the tenth or twelfth week of pregnancy, the uterus may be injured directly by a blow on the lower abdomen, and abortion may more or less quickly ensue, but mechanical injury more usually acts indirectly, the concussion disturbing, it may be, the molecular state of the organ, or causing the immediate rupture of one or more of the functionally active maternal vessels. The blood thus extravasated may never make its escape externally; it may remain pent up between the fetal and maternal structures, and constitute a concealed haemorrhage. Of such an accident pain is, as a rule, the only symptom, as the haemorrhage is seldom great enough to cause any alarming disturbance. The pain is due to irregular tension of the uterus, a tension which is in a sense salutary so long as it does not excite undue contraction of the organ, and cause thereby a more extensive separation of the fetal and maternal structures, since it tends to lessen the possibility of a further haemorrhage. When confronted with a case of this kind, we must avoid the administration of any drug likely to cause either undue contraction or relaxation of the organ. Absolute rest is the best treatment. In the majority of cases, whatever the cause may be, when a breach in the continuity of one or more of the serotinal vessels takes place, some of the extravasated blood finds its way to the external genitals, and in such cases treatment should be neither routine nor haphazard, but scientific if possible. The disturbance from mental shock exerts its influence through the vasomotor nerves, and inhibits either the tone of the uterus or the processes going on in the organ, and of such external haemorrhage is invariably the sequence.

Necrosis of the amnio-chorion is a very rare cause of abortion, and it determines this event by allowing the amniotic fluid to escape.

From our point of view (that is, the clinical) degenerations of the placenta are of no interest.

A CASE OF TUBAL ABORTION.

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DURING the past seven months I have met with 3 cases of early ectopic gestation in my own private practice. Each of these has been successfully operated upon, but only the last presents special features making it worthy of record. As Bland-Sutton remarks in the latest edition of his textbook:

Tubal abortion has become a subject of importance. When attention was first drawn to the accident, many observers regarded its occurrence as questionable or of great rarity; now the condition is well recognized, and in the practice of some observers it is reported to be the most frequent mode by which tubal pregnancy terminates (Cullingworth and Taylor). In our (Bland-Sutton and Giles) very long series of cases the proportion of tubal abortion to rupture of the tube is as 1 to 4.

HISTORY OF PRESENT CASE.

On May 14th, 1907, Mrs. R., a primipara, aged 32 years, walked up from her house to my consulting rooms, a distance of three-quarters of a mile, about 8 p.m., to get advice concerning certain irregular pains and haemorrhages from which she was suffering. She did not consider her troubles serious, and it was only in deference to the wishes of her friends that she consented to seek advice at all.

She stated that she had been regular about every twenty-six days for the past three years. She had had a child fourteen years ago. She was unwell on March 9th last as usual, but to her surprise again became poorly for four days on March 29th. On the third day after she was better—that is, on April 5th—coitus took place. This, I should say, is the important date on which impregnation was effected.

She showed just a slight sign of being poorly on April 24th, but this was so little as to be scarcely noticeable. On April 28th, the day before the expected period, coitus again took place, but she was not unwell on April 29th. On the morning of May 2nd, however, after coitus, she was seized with severe bleeding (bright red) which lasted over half an hour, and quite soaked her nightgown. Later on in the day she got up "feeling all right, and went about her washing and ironing as usual." From May 2nd she began to get "squeamish" at various periods of the day, but had no actual vomiting. On May 11th, while going to the local grocer's, she started to come unwell, and felt as if a flooding were imminent, this being accompanied by great weakness, which, however, passed off on her resting at home.