

diagnosis as to the source of the leucorrhœa, that is, whether it be uterine, vaginal, or vulvar. It is for want of attention to this point that vaginal injections are found to be so often useless. Vaginal injections fail, because they do not touch the main seat of the disorder, which, in the majority of cases, is in the uterus itself. But although they fail to cure, they may be useful as far as they go. In constitutional leucorrhœa, the vaginal mucous membrane as well as the uterine is commonly involved; and something is gained if we improve the condition of a part of the affected tract. There is, therefore, sufficient reason to prescribe them, and thus to enlist the patient in her own service. She may herself manage the vaginal injection. For the topical treatment of the uterine mucous membrane she must have recourse to her physician.

The most useful and convenient topical applications in strumous and most other forms of leucorrhœa are astringent liquids. Amongst these, acetate of lead, sulphate of zinc, sulphate of alumina, decoction of oak-bark, solutions of tannin are the best.

The topical applications best suited for the interior of the uterus are sulphate of zinc, nitrate of silver, sulphate of alumina, iodine. The best mode of applying these will be described hereafter. Emmet<sup>1</sup> extols hot vaginal injections. Their first effect is dilatation; secondly, contraction. The hips must be raised, and a properly-shaped bed-pan be placed underneath. A gallon of water at 98° F. must then be slowly injected. This must be done by a nurse. It allays local irritation, and soothes in less time than any drug.

In the case of syphilitic taint the same means are useful, but in addition I commonly use the iodide of mercury ointment, introduced by means of the ointment-carrier, I have contrived for the purpose.

In the strumous leucorrhœa of children, cod-liver oil and iron are of signal service.

The second indication is, if we discover any local disease, as a tumor, a polypus, displacement, abrasion, congestion, hypertrophy, to endeavor to remove this cause or complication.

The third indication is, in the event of our detecting no constitutional diathesis or local disease, to treat the leucorrhœa as an independent disease, if the discharge be excessive or entailing obvious local distress or general weakness. In this class of cases we should begin by correcting any disorder of the digestive organs. We should be especially careful to regulate the action of the bowels, to remove and to prevent the accumulation of feces in the lower bowel. We should then endeavor to restore the general tone and strength by good diet, tonics, and exercise. Amongst the remedies most useful are strychnine, iron, quinine, and arsenic. The last is often remarkably efficacious in leucorrhœa depending upon debility. Local remedies, as alum or zinc injections, are often useful adjuncts; but in young women, in whom the presumption is against any morbid condition of the mucous membrane, they will be generally unnecessary, and for other reasons it is desirable to avoid them.

Balsamic medicines, especially turpentine, are often very useful, and now that they can be given in capsules, or "pearls," the chief objection

<sup>1</sup> New York Med. Journal, 1874.

to their use is overcome. Courty speaks highly of the advantage to be derived from tar-water mixed with the wine drunk at meals. It is made palatable at first by mixing with seltzer-water. The same excellent author extols hydro-therapeutics. In the chronic forms of leucorrhœa cold water in every form, as full baths or hip baths, produces the best results. It is, at the same time, the best revulsive and the best tonic.

In this chapter I have attempted to give merely a general account of leucorrhœa, regarding it, as for practical purposes it often is regarded, as a distinct pathological condition. Leucorrhœa, as a symptom dependent upon morbid conditions of the uterus and vagina, will be incidentally described as a part of the history of these several morbid conditions.

The watery and purulent discharges might not inaccurately be included under the common head of "Leucorrhœa." It will be useful, at any rate, to study them in this connection.

#### THE WATERY DISCHARGES.

When these occur, we must first of all determine the presence or absence of pregnancy. It is no uncommon thing that discharges of water, more or less profuse, take place in pregnant women. This is the "*hydrorrhœa gravidarum*." Gushes of water, quite clear, may occur at almost any time during pregnancy; but they are more frequent in the latter months, and especially in the last month. Happening at this time, they are commonly taken as an indication of commencing labor, and many are the false alarms which patient and doctor have to suffer from this cause. "The waters have broke," says the nurse. You go, as in duty bound, and find probably the os uteri closed, nothing resembling active labor pains. What are you to do? If you wait for labor, you may wait for a week, or two or three weeks. If, on examination, by ballotement, you find the child still floats in the uterus, the os uteri not open, and no active pains, you may go home and wait in peace for another summons.

What is the source and nature of this *hydrorrhœa gravidarum*? Several theories have been expounded. The character of the fluid differs in some respects from that of liquor amnii. It is odorless and resembles blood-serum or the serous fluid effused in the peritoneal sac. Ruysch and Rœderer thought it came from rupture of lymphatic vessels, or of hydatids of the uterus; Böhmer thought it escaped from a second abortive ovum; Delamotte and Cruveilhier that it came from a cyst near the ovum; Deleurye, Puzos, Naegele, and Dubois that it came from the inner surface of the uterus, being secreted externally to the ovum. Dubois says it is the result of loosening of the membranes from the uterus when the vessels pour out serum. Hegar says the source is the uterine glands of the decidua. Thus he describes<sup>1</sup> the glands of the mucous membrane as being found in decidua at the sixth month of gestation, and argues that their sudden disappearance in the subsequent months is improbable. In a case of *hydrorrhœa* he found in the decidua vera, at the beginning of the eighth month, an enormously developed glandular body. At the bottom of this morbid growth was a general hypertrophic condition of the

<sup>1</sup> Monatschrift für Geburtskunde, 1863.

decidua and its glands. These gave out the excessive secretions. In a case related by Dr. Graef,<sup>1</sup> repeated discharges took place, and the foetus was expelled at the end of six months. The membranes were very delicate, and openings were found in them. In this case, it is probable that the fluid was true liquor amnii. In another case the patient suffered, during the last three months, from repeated watery discharges; the uterus rising and falling with the gathering and escape of the fluid. The membranes were found without rent. Graef regarded this as a case of catarrhal hydrorrhœa.

I believe there are various sources. In some cases the fluid is liquor amnii. This may come either from rupture of the membranes; from rapid transudation under pressure; from rapid formation and accumulation of liquor amnii in the amnion; or from the bursting of a cyst formed between the amnion and chorion, or between two layers of chorion, the proper amniotic sac remaining intact. In the majority of cases, however, the fluid is not amniotic. It is then the result of a rapid secretion from the uterine glands or from the cervical cavity. In the early months, whilst there is still a free space between the decidua vera and the decidua reflexa, there is a large area of developed glandular surface.

In one case, which was under my close observation, hydrorrhœa to the extent of a pint or more daily, occurred during the three latter months of gestation. This certainly came from the cervix. Other cases satisfy me that the cervical glands may secrete large quantities of watery fluid; and that there is generally no necessity to seek higher up for the source. This copious secretion finds analogy in the occasional free secretion of water from the stomach, and in the profuse salivation of pregnancy. As I have shown elsewhere, the entire glandular system is rendered more active in pregnancy; and the increased vascular tension of this condition is relieved by discharges, sometimes at one point, sometimes at another. I do not think it is desirable to try active means to control these discharges, which are really of physiological significance. The only true remedy is the termination of gestation, which must be awaited with patience, unless serious constitutional impairment threaten.

I have observed a *puerperal form of hydrorrhœa*. Thus watery discharges may continue for a month or longer beyond the proper lochial flow. Generally in these cases the water is dirty, discolored, occasionally stained with blood, and offensive. The most common cause I have found to be the retention of a portion of placenta or of clots in the uterus; but a polypus may produce like results. The watery discharges alternate, but not always, with discharges of blood. The fluid may, under certain conditions, collect in considerable quantity in the uterus, so that the organ becomes greatly distended before the collection is expelled in a gush.

Sometimes watery fluid is mingled with air, constituting *physo-hydrometra*. This is also a puerperal or post-puerperal condition, and is commonly the result of retention of some portion of placenta or membranes, and the admission of air into the uterine cavity. If an examination is made when the uterus is relaxed after labor, especially if the hand be

<sup>1</sup> Jenaische Zeitschrift, 1865.

introduced into the uterus, the vaginal walls are separated from their usual contact, and a channel is formed along which air easily enters. Merely turning on the side, or a little more prone, will often, by favoring the fall of the uterus forwards, produce a vacuum into which air will rush. This is one reason amongst others why I am unable to approve of the abolition of the old-fashioned binder, which some people would condemn, for no better reason than that I can see than because it is old-fashioned. After labor, especially in pluriparæ, the abdominal walls are so relaxed that they can give no support to the uterus. The binder does temporary duty for the inert abdominal walls. The history of physo-hydrometra is, I believe, this: a portion of placenta, membranes or clots, remains in the cavity of the uterus after labor; some air gets in as I have described; decomposition ensues, and the gases of putrefaction are added to the air from without, whilst the os uteri is occluded by the placenta or blood-mass falling over it. When this occurs, there is invariably hectic or irritative fever; peritonitis and septicæmia commonly attend; great abdominal pain. The enlarged, distended uterus can be mapped out rising as high as, or higher than, the umbilicus; and resonance is made out on percussion.

One condition, the result of impregnation, often leads to copious and repeated discharges of watery fluid: the *hydatidiform degeneration of the chorion*. In this case the ordinary signs of pregnancy may not be present, and even the patient herself may not think she is pregnant. There is, however, always evidence of enlargement of the uterus, and generally great pelvic distress. The water escapes in gushes at uncertain times; it is often tinged with blood, resembling red currant water; it has not the offensive odor belonging to the watery discharges of cancer; sometimes, but not often until late in the progress of the case, cysts will be found swimming in the water; it is generally expelled with painful uterine contractions. In a case I saw at St. Thomas's Hospital, the nature of the disease was not at first suspected. There was some abdominal enlargement, retention of urine requiring the catheter, and most distressing pelvic pain with irritative fever. The os uteri was found high up above the symphysis pubis, whilst behind it the pelvic cavity was filled with a large, rounded, firm mass, taken to be either the retroverted gravid womb or a fibroid tumor. One day a large quantity of water, blood, and a mass of chorion-cysts were expelled. We had, in fact, the condition of retroverted gravid womb complicated with hydatidiform or cystic degeneration of the chorion. I have since seen a similar case at St. George's.

Apart from pregnancy, watery discharges are sometimes of grave significance. During and after the climacteric period, the most frequent cause is some form of malignant disease, especially the so-called cauliflower excrescence of the uterus. In this case other symptoms will probably point to the seat and nature of the disease. The fluid discharged is seldom clear; it is generally turbid, dirty, often tinged with blood, resembling water in which flesh has been macerated; it contains shreds or flocculi of solid matter, the proceeds of superficial erosion or necrosis of the surface of the diseased growth, and is almost always of a peculiar offensive odor. It often alternates with hemorrhage. Local exploration

\* hydatids of villi of chorion only occur in fruit 3 mos. of gestation because after this they are obliterated, but, all elements Müller's

will place the nature of the case beyond doubt. Another form of malignant disease giving rise to watery discharges is the "oozing excrescence of the labia."

But we must remember that similar discharges may take place from polypus or inversion of the uterus. Hence we have another example of the wisdom of not pronouncing a diagnosis until we have made an internal examination. Water may escape in large quantity from the rupture or perforation of an ovarian cyst in the vagina. In such a case, the rapid concurrent diminution of the abdominal tumor will lead to the right conclusion.

I have seen profuse watery discharge from the uterus and its neck in cases of retroversion and retroflexion of the uterus. Here we may infer that their glandular system was unusually active, and that the vascular fulness was increased by the imperfect return of the blood by the veins, compressed or strangled by the malposition or distortion of the uterus. Certain it is that in one very marked case profuse watery discharge ceased with the restoration of the uterus to its normal position.

Watery discharge may be urine escaping from a vesico-vaginal fistula. The character of the fluid and other circumstances seldom fail to establish the exact nature of the case.

Under certain conditions of the mucous membrane of the uterus, more especially of the cervix, copious secretion of watery fluid may take place rapidly. I believe this chiefly occurs when the mucous membrane is hypertrophied. In this case the numerous glands are probably also hypertrophied, and acquire a greatly-increased activity. It will be remembered that all the mucous membranes at times discharge large quantities of watery fluid. Thus the mouth is the seat of ptyalism, the stomach of pyrosis, the intestinal canal of diarrhoea. It is rational to infer that causes analogous to those which induce watery secretion from the mucous membranes in these organs, may induce the like event in the mucous membrane of the genital tract.

## DISCHARGES OF AIR.

Air may get into the vagina, if not into the uterus, in the non-pregnant state. In the normal condition the walls of the vagina are maintained in perfect contact, and no air, or probably very little, is admitted. But when the parts are greatly relaxed, the vulva open as when the perineum is torn, the lower part of the vagina is no doubt exposed to the contact of air, but the very condition of patency prevents the retention of the air to such a degree as to lead to its escape in perceptible volume. Air also penetrates where too large a pessary is worn, which keeps the vaginal walls apart. But under peculiar circumstances air enters in large quantity, to be expelled with noise. Dr. George Harley details<sup>1</sup> a curious case, in which he carried out decisive experiments, to prove the correctness of the diagnosis. A pluripara frequently expelled air from the vagina with a loud noise. It was ascertained that no connection existed between the rectum and vagina. Dr. Harley took a full-sized

<sup>1</sup> *Obstetrical Transactions*, 1863.

male catheter, to which was attached a long india-rubber tube with a stopcock at the other end. The catheter was introduced into the uterus, the end of the tube with the stopcock being placed in a tumblerful of water. No air escaped when the instrument was in this position; but, on placing the open end of the catheter in the vagina, an instantaneous discharge of gas took place. The water was found to be sucked up through the tube into the vagina. It was found that the vagina sucked in and expelled the air by spasmodic action. It was further observed that the abdominal muscles assisted in the suction process. The uterus was completely retroverted. This displacement being remedied, and the health improved by tonics, a cure ensued. Dr. M'Clintock says:<sup>1</sup> "Two or three women who had prolapse of the womb have told me that soon after getting up in the morning they have been conscious of the escape of air from the vagina. The vagina was enlarged, the lower part of the uterus hypertrophied. There was no fistula; the air came from without."

If we observe the vagina when the duck-bill speculum is applied, the movements of rise and fall under the influence of the rise and fall of the diaphragm are seen. Dr. Adolph Rasch has investigated<sup>2</sup> these phenomena with great care. He says, if a multipara, whose genitals are normal, be placed on her back, with the thighs flexed and abducted, and the vaginal orifice closed, movements caused by respiration are seen, but no air enters. In the lateral position the same thing is observed even if the vagina is lax, and even when the perineum is ruptured. When the patient is placed in the prone position, or on all-fours, if the vulva be open, air will enter, because the intestines falling downwards by gravity causes a vacuum. Under this condition violent exertion may expel air, giving rise to vaginal flatus. If the abdomen be supported by the hands or a bandage, no air enters.

There are several interesting applications of this knowledge. It teaches that the best position after labor, if not during labor also, is the dorsal decubitus; that the same position is also best in the case of pelvic abscess or hæmatocele discharging into the vagina; and that we must carefully consider this respiratory rise and fall of the vagina when selecting pessaries. It is by turning to account this action that we derive the greatest advantage from the spoon or Sims's speculum. The blade drawing the perineum well back, whilst the semi-prone position of the patient favors the falling forwards of the abdominal viscera, air fills the vagina, counteracts the effect of inspiration, and thus enables us to get a good view of the os uteri. The same position also greatly aids our efforts at reducing inversion of the uterus, and in replacing a prolapsed umbilical cord. On the other hand, in most operations upon the uterus and vagina, where it is of importance to bring the uterus as low down near the vulva as possible, the dorsal position, by bringing the force of gravity to counteract the respiratory rise of the uterus, and which can further be greatly aided by direct pressure by an assistant's hand above the symphysis pubis, is the best.

<sup>1</sup> *Diseases of Women*, p. 54.

<sup>2</sup> *Obstetrical Transactions*, 1870.

## THE PURULENT DISCHARGES.

Some purulent-looking discharges are in reality mucous, the appearance being due to epithelium-cells, not to pus-globules. When pus-globules in large proportion are found, they indicate generally a breach of continuity of the mucous surface—that is, a granulating or ulcerated surface. When pus escapes in quantities, suddenly at intervals, and sometimes by continuous draining, the source probably is an abscess whose seat is outside the uterus or vagina, as in what is called pelvic cellulitis, opening into the vagina. In such a case examination by touch internally, and externally in the iliac regions, will reveal the extra-uterine disease. The uterus will be felt set fast by surrounding firm plastic effusion. The os uteri will generally be found in the centre of the pelvis, low down, or inclined to one side, if the pelvic peritonitis is chiefly unilateral. This position of the os uteri distinguishes pelvic peritonitis from retro-uterine hæmatocele, which pushes the os uteri forwards close behind, and sometimes above, the symphysis pubis, and which may also be attended by suppuration.

A suppurating ovarian cyst may contract adhesion with the roof of the vagina, and form a fistulous perforation through which pus may escape.

I have had under my care a case in which pus is voided by the vagina, the origin of which is an abscess in the left hypochondriac region opening into the intestine, and which at a lower part has formed a fistulous communication with the vagina.

The glands of the cervix or of the vulva, especially the vulvo-vaginal gland, when inflamed, as from gonorrhœa, discharge pus freely. Abscesses may form in the connective tissue between the uterine neck and bladder, or at any lower point of the vagina, or in the loose tissue of the labia vulvæ: and, bursting, will give a purulent discharge.

To distinguish some apparently purulent discharges from mucous, appeal to the microscope is necessary. The distinction is important, because it is generally true that the unbroken mucous membrane of the genital tract does not yield pus. When true pus appears, it is therefore mostly an indication of erosion, ulceration, or abscess. As Virchow has pointed out, all mucous membranes with cylinder-epithelium are little disposed to form pus. The matter which is produced is found, on accurate examination, to be only epithelium, though it may, to the naked eye, have a thoroughly purulent appearance. The intestinal mucous membrane rarely produces pus without ulceration. The mucous membrane of the uterine tubes, which is often covered with a thick mass of entirely puriform appearance, shows almost always only epithelial elements.

On other mucous membranes—the urethra, for example—we observe copious discharges of pus without the least ulceration.

We thus see how numerous and strange are the sources of pus in the vagina, and that a purulent discharge is no sure evidence of disease of the uterus or vagina. Exploration must extend beyond these organs.

## THE SIGNIFICANCE OF HEMORRHAGIC DISCHARGES.

Discharges of blood from mucous membranes are not necessarily significant of local disease. For example, epistaxis from the Schneiderian membrane is not infrequent in childhood and old age, unconnected with organic disease anywhere. Although when it has once set in, the bleeding may go on to an excessive, to an alarming, and sometimes even to a fatal extent, it seems in the first instance to be determined, by an effort of the vascular system, to unburthen itself of a superfluous accumulation. It appears to be critical, and in many cases to be beneficial. During the period of sexual life the uterine mucous membrane is the outlet towards which any overflow is directed; during this period Schneiderian epistaxis or other forms of hemorrhage are rare; the seat of election for critical and other hemorrhages is the uterus. And it is remarkable that, as a result probably of the disposition which the uterus had acquired of acting as a periodical evacuant, long after the cessation of menstruation proper, it still continues to be the safety-valve by which vascular repletion or tension is relieved.

The aptitude of the uterus to serve in this way is occasionally manifested also at an early age; that is, just before, or about the institution of the menstrual function. Young girls sometimes begin with a copious flooding, which does not appear to be distinctly determined by ovulation.

In the cases referred to, hemorrhage even copious does not necessarily imply disease, at least not disease of the ovaries or uterus. It is an expression of constitutional or general vascular tension. Still hemorrhage from the uterus, especially if prolonged or repeated, is so commonly a consequence of disease of that organ, that it ought, as a general rule, to be taken as a warning to make local examination. This is the more imperative, because in many cases this examination leads at once to the detection of a cause which can be quickly removed; and in almost all cases the surest way of stopping dangerous hemorrhage is by topical applications.

This tendency of the vascular system to seek its outlet by the uterus is fortunate. If a vent were not found here, the risk of internal effusions would be enormously increased. And not even excepting the Schneiderian membrane, the uterine mucous membrane is the most under control.

Climacteric uterine hemorrhage may avert an attack of apoplexy. The outlet of blood from the uterus may avert effusion from the ovary or its plexuses into the peritoneum. In this way Nature often proves herself a better physician than the modern practitioner who has abandoned the use of the lancet.

It may be stated, as a general proposition, that whatever produces hyperæmia predisposes to hemorrhage. Thus inflammation takes high rank as a cause of hemorrhage. Inflammation involves a *vis à fronte*, attracting blood to a part, and so filling the capillaries that they may burst.

As in other parts of the body, hemorrhage from the uterus may be *active* or *passive*. In active hemorrhage rupture of vessels arises from the attraction of an inordinate quantity of blood into them. In passive

hemorrhage the escape arises not simply from distension from excess of blood, but generally also from the depraved quality of the blood, from the ill-nourished, weakened condition of the coats of the vessels, and the impeded return of the venous blood. In a woman who had suffered much from metrorrhagia, the blood contained only 2 parts in 1000 of globules, 1.8 of fibrin, 61 of solid materials of serum, and 915 of water.

Hemorrhage from the uterus is sometimes called *menorrhagia*, sometimes *metrorrhagia*, sometimes *flooding*.

The term menorrhagia implies an excessive flow of the menstrual discharge. Although in fact the menstrual *nisus* or ovulation exerts a powerful initiative and aggravating influence in the production of hemorrhage, yet there often exists in association with apparent menorrhagia some local disease which is more strictly the cause. That is, without this local disease the ovarian stimulus would produce no more than the ordinary menstrual flow. But a mucous membrane once set bleeding easily goes on pouring off blood. It may be likened, and indeed often is so by patients, to the turning on of a tap. The vessels of the mucous membrane, whether they have burst or not, pour off blood with the greatest readiness; and the stream being once directed to a given part which affords ready outlet, a derivative action towards this part is easily kept up.

Metrorrhagia means very much the same thing as flooding. It is used to express a copious flow of blood not obviously associated with menstruation. Uterine hemorrhage is another synonym. As a general term it is free from the objection which applies to "menorrhagia," as it expresses simply a fact independently of all theory of causation.

In almost every case of uterine disease leading to hemorrhage, periodicity more or less regular is observed. There are commonly intervals of remission or cessation. Women observe that their courses last for two or three weeks at a time, leaving only one or two weeks of freedom. The explanation is found in the periodical increase of vascular and nervous tension attending ovulation and the menstrual *nisus*. This periodicity is often preserved long after the natural menopause, when any disease, as cancer or tumor, continues to be the cause of hemorrhage. In the same way as patients of tuberculous diathesis are eager to persuade themselves that occasional hemoptysis is due to accidental insignificant causes, so women in whom losses of blood, more or less periodical, continue or recur long after the menopause, are ready to believe that these losses are natural or exaggerated menstrual discharges, and that they may be taken as evidence of protracted sexual life.

To determine what losses must be ascribed to natural menstruation and what to pathological causes, we must seek to define the characters of natural menstruation. Any marked departure from these characters must then be made the subject of closer investigation, in order to separate or analyze the often combined physiological and pathological factors.

The history of menstruation will be studied more methodically hereafter. It will be enough to state here the leading features of healthy uncomplicated menstruation. *Fluid* blood, somewhat glutinous, is discharged gradually, to the amount of two to four or six ounces, over a period of two, three, or four days, at regular intervals of twenty-eight

days, or nearly so, beginning at the age of twelve, thirteen, or fourteen, and lasting until forty-five or forty-eight.

There is a range of variation in all these characters, depending in some cases upon individual peculiarities. For this allowance must be made. But it is a safe and prudent clinical rule to suspect that any wide departure from these characters depends upon some pathological complication. Taking the characters of normal menstruation as our standard, we shall be justified in concluding that discharges of coagulated blood, discharges habitually exceeding four or six ounces, discharges continued for a week or more, leaving intervals of freedom shortened to three weeks or less, discharges occurring during the proper intervals between the periods, and discharges occurring long after the age of forty-five or forty-eight, especially if excessive or irregular as to periodicity, are of pathological significance. The same thing may be said of hemorrhagic discharges recurring in women after the menopause; that is, after a complete cessation of the ordinary menstrual flow for a year or more. It may be assumed, as a physiological fact, that the function of ovulation is not resumed after having been suspended at its natural term. The ovary has then undergone a process of involution or atrophy which is incompatible with the development of ova. Discharges of blood, then, after the menopause depend upon other causes than normal ovarian stimulus. The circumstances under which hemorrhage appears will occasionally declare its character. For example, hemorrhage may immediately follow some accident, as sudden exertion, or coitus.

In addition to the general or average standard deduced from the study of the natural history of menstruation, we shall often draw the most trustworthy conclusions from the particular study of the individual patient. She herself must often furnish her own standard of comparison. Any marked change from the habitual characters of the menstrual function will point to the necessity of inquiring into the cause.

Hemorrhages may generally be considered abnormal which are irregular in their appearance, or excessive in duration or quantity, or which obviously tell upon the system by inducing anæmia or debility. Another test of abnormality will often be found in the association of other symptoms with the hemorrhage.

Abnormal hemorrhage is not always marked by excessive quantity. Blood may appear in streaks or small quantities mixed with the mucus of leucorrhœa. This will often be connected with breach of surface of the mucous membrane, as abrasion or ulceration; often, however, with simple congestion or inflammation. Apart from pregnancy, a copious flow of blood will generally depend upon some organic alteration in the structure of the uterus, as hypertrophy of the body or cervix, the growth of tumors or polypi, or malignant disease.

If copious hemorrhages occur in a woman past the child-bearing age, the probability is great that the cause is malignant disease; and this probability rises if the cessation or diminution of the blood-flow is followed by a watery discharge stained with blood, offensive in odor, and showing *débris* of tissue in the form of shreds. It must be remembered, however, that the discharges attendant upon polypus and invasion of the uterus may present very similar characters. Many cases of polypus

have been seen in which the history, subjective symptoms, and discharges so nearly resembled those of malignant disease that opinions were strong in favor of this view until corrected by examination. And in this connection we must not forget that copious hemorrhages occasionally occur in aged women in whom no disease whatever can be detected. These hemorrhages are similar in their significance to the Schneiderian epistaxis of the aged. If not excessive they may even be beneficial.

A clinical test of some value may be found in the following facts: Immediately preceding and following ordinary menstruation some amount of leucorrhœa is not uncommon; but during the intermenstrual times there is no discharge of any kind when there is no local disease. When, therefore, the hemorrhage is not great—and the rule will apply with especial force in young and single women—examination may be postponed. On the other hand, whenever there is continuous discharge, hemorrhagic or leucorrhœal, the probability is great that there is local disease, and the indication for local examination is more distinct.

A discharge of pure bright blood occurring suddenly after intercourse or exertion is presumptive of early malignant disease. In polypus the hemorrhage is usually followed by mucous or watery discharges.

Abortion or labor at term is not seldom followed by hemorrhages more or less continuous or intermittent for many weeks or even months; so long, indeed, that their dependence upon the puerperal changes may be lost sight of.

Uterine hemorrhages may be classified as follows:—

A. Hemorrhages escaping externally, *without alteration of the structure of the uterus*, as—

1. From primordial disease of the heart, liver, or lungs.
2. Exaggerations of the menstrual function, as in plethoric girls at the onset of menstrual life, and in women at the menopause.
3. Throughout menstrual life, or beginning towards its close, from abdominal or hepatic congestion or obstruction. In some, hemorrhagic menstruation seems hereditary.
4. From emotion or physical shock.
5. Complementary of hemorrhages suppressed elsewhere.
6. From sudden suppression of the action of the skin.
7. From ovarian or mammary excitation. Excess of coitus, especially if at menstrual epoch.
8. The climacteric and senile hemorrhages.
9. From blood-disease; as variola, scarlatina, typhoid, acute atrophy of the liver, leucocythemia, scurvy.

In this class we see that the cause of hemorrhage may be distant from the uterus. Hypertrophy of the heart is a not uncommon cause of uterine hemorrhage, especially in pregnancy and childbed. The hypertrophy may be the result of antecedent disease, or of pregnancy. This is one cause why the risk of hemorrhage increases with the number of pregnancies. There is an increasing difficulty in the process of involution of the heart, and an increasing disposition to fall into fatty degeneration. A feeble, fatty heart also I have observed disposes to uterine hemorrhage. Imperfect involution of the uterus is common in the subjects of fatty heart.

Liver disease may act simply, or as complicating heart-disease. It acts especially in women past forty, during the climacteric, and in those who indulge in drink.

Lung-diseases, especially those marked by dyspnoea and hyperæmia or œdema, dispose to uterine congestion and hemorrhage.

Uterine hemorrhage is sometimes observed in phthisis, although more commonly this disease induces amenorrhœa.

It is not always safe or judicious to stop hemorrhage depending upon remote obstructions to the circulation hastily or completely. There can be no doubt that they act as useful evacuants and derivatives regulating tension.

Menorrhagia has occasionally proved fatal at the onset of the menstrual function in girls. The late Mr. Obré related the case of a virgin, aged fourteen years and three months, in whom the first menstruation set in violently, and could not be checked. Everything was found healthy, except the uterine mucous membrane, which was softened and ecchymosed, and in some places detached from the muscular coat. This alteration was probably nothing more than the menstrual decidua infiltrated with blood.

I saw, with Mr. Hodgson, of Brighton, a girl of fourteen to fifteen, who on several occasions lost blood so profusely under the sole influence of menstruation that her life was barely saved. Once the flooding was arrested after dilating the cervix and injecting perchloride of iron. All other remedies seemed ineffectual.

B. *The hemorrhages of pregnancy.*

1. Abortion.
2. Detachment of placenta.
3. Extra-uterine gestation.
4. Retained placenta or clots—placental or fibrinous polypus.
5. Hydatidiform placenta.
6. Varix of the vulva or vagina.

It must be borne in mind that in many cases of hemorrhage in pregnant women the blood does not come from the cavity of the uterus, but from the cervix uteri, which may be abraded and hypertrophied. The hyperæmia and the great tension of the vascular system of pregnancy easily issue in hemorrhage where the mucous surface is unsound.

Many of the conditions, with or without alteration of structure, which occur in non-pregnant women may occur also in the pregnant; and pregnancy may even increase the disposition to hemorrhage.

C. *Hemorrhages with alteration of structure.*

1. Metritis proper.
2. Inflammation of the cervix uteri.
3. Engorgement of the body and cervix induced by stenosis or displacement or distortion of the uterus or other causes.
4. Hypertrophy of the cervix or of the body of the uterus, especially of the mucous membrane, as from syphilis.
5. Fungous granulations of the os, abrasions, ulcerations, especially if there is syphilitic complication.
6. Fibroid tumors.
7. Polypi of the uterine cavity, cervix, or os, or of the vagina.