

ing lost the projecting epithelium which bound down smoothly all surface inequality.

After all, it may be said, this is a dispute about words. A condition which so closely corresponds to the classical definition of ulceration may fairly be called ulceration. This might be conceded, were it not that the common, vulgar as well as professional, conception of ulceration embraced the idea of a spreading, eroding action; and that thus the word bears a more formidable significance to the patient than the reality justifies. Now, we all know that the morbid surface is not so affected. There is a bared, secreting, easily bleeding surface trying to heal. It is often slow to heal. It may take weeks and months to recover its normal investment of epithelium; but during all this time ulceration cannot be said to go on, otherwise than in the most languid imperceptible form.

But another process is certainly going on. This is exudation. The gorged vessels, through which their contents are only imperfectly propelled, leave something behind in the tissues. "Exudations," says Druitt, (Article "Inflammation," Cooper's *Surgical Dictionary*, edition 1872), "cannot remain dormant. They rapidly undergo changes either in the way of development or degeneration." In this case the tendency is towards development. This means hyperplasia and hypertrophy. The connective tissue, or fibrous tissue of the cervix especially, becomes increased in quantity; the cervix becomes after a time denser; it elongates. This latter part of the process, the conversion of exudation into permanent tissue, may be averted by subduing the vascular engorgement, and healing the denuded surface.

The *treatment* of this condition has been described in the preceding chapter. It consists essentially in "rest," tonics, good diet, and local astringents.

If a cure be not effected at this stage, the case will often become more obstinate. The natural tendency to heal can hardly be trusted to if the powers of the system are sensibly reduced. If there be evident anæmia and attendant impairment of nutrition, repair cannot be expected to proceed in a part exposed to constant disturbances, and periodical fluxes of blood. Generally, the vaginal-portion loses in bulk; some degree of contraction takes place, owing to the absorption of the fluid element of the exuded material, and the condensation of the plastic element ensuing upon its conversion into fibrous tissues. The abraded area looks smaller, and, in fact, is smaller, but this is often not so much the result of actual healing, as of the general contraction of the vaginal-portion. (See Fig. 103.) There is still a free secretion of mucus, viscid, coming from the cervical cavity. There is still more or less vascular engorgement, and some infiltration of tissue, with recent exudation. The denuded area looks red, granular, like a strawberry or raspberry. The vagina is still relaxed, and some degree of epithelial shedding goes on from its mucous membrane. The lumbar and dorsal pains persist. There is often pain in the seat of one or other ovary, generally, as Bennet says, in the left.

The *treatment* is still the same as for the earlier stage. The denuded surface should be lightly touched every five or six days with nitrate of silver, or tincture of iodine, and the like application should be made to the interior of the cervical canal. Occasionally the solid sulphate of

zinc may be substituted. Vaginal lotions of zinc, alum, bark, or tannin should be used daily. If there be any prolapsus, a Hodge pessary will be of essential service in maintaining "rest," and diminishing the local engorgement.

Under this treatment, the denuded surface will often get covered in in a few weeks, and the excessive vascularity will be reduced. But exudation has taken place; and exudation has been followed by new growth. This hypertrophy, or hyperplasia, even although not attended by much increase of bulk, so as to induce prolapsus, or dragging, or pressure upon surrounding organs, is almost always attended by irritation, which keeps up increased attraction of blood, hypertrophy of the glands, and free leucorrhœa. Pain continues to wear the nervous centres. Healthy nutrition is impeded.

At this stage, the application of potassa cum calce, or the actual cautery to one or the other lip of the os uteri, will often exert the most beneficial influence. The mode of applying these agents will be described under the treatment of chronic metritis.

The further history of hypertrophy, or fibroid degeneration of the cervix uteri, will be traced in connection with that of prolapsus.

## CHAPTER XIX.

CONDITIONS MARKED BY ALTERED VASCULARITY OR BLOOD-SUPPLY: FLUXION; HYPERÆMIA; CONGESTION; INFLAMMATION; METRITIS; ENDOMETRITIS OR UTERINE CATARRH; TUBERCULAR AND SYPHILITIC ENDOMETRITIS; INTRA-UTERINE MEDICATION; CYSTIC ENDOMETRITIS; SOFTENING AND INDURATION OF UTERUS; SENILE CATARRH.

The vascular system of the genital organs and the proportion of blood supplied may be in excess or deficiency.

The conditions characterized by excess may be distinguished as—1. *Fluxion or simple determination of blood.* 2. *Hyperæmia.* 3. *Congestion or Engorgement.* 4. *Inflammation.* The conditions characterized by deficiency are summed up in *Anæmia.*

Whilst fluxion, hyperæmia, or congestion may each stop short, inflammation implies the previous existence of fluxion and congestion. It may be regarded as the climax of the first three conditions.

1. *Fluxion* in its simplest form may be defined as a transitory flow of blood to the parts. One example of it may be compared to the rush observed in the cheeks under the emotions of shame or anger. The uterus and ovaries are certainly subject to similar determinations of blood under

the influence of various emotions, as the sexual passion, and of reflex irritation, as that produced by the child sucking at the breast. This fluxion is of course perfectly physiological; and, if occurring in healthy organs, entails no ill effects, unless it be artificially and inordinately stimulated.

An example of simple fluxion is the physiological determination of blood excited by ovulation at the menstrual periods.

The vascular fulness determined by the developmental attraction of pregnancy may be regarded as an example of fluxion. Analogous to this is the fulness dependent upon the abnormal developmental attraction produced by the growth of fibroid tumors in the uterus. One difference which exists in the two cases, is that in the first, the fluxion is more uniformly persistent, less disturbed by the periodical molimen of ovulation; it is a steadily maintained active hyperæmia. In the second, the persistent hyperæmia induced by the developmental stimulus is further liable to the periodical molimen of ovulation. Hence the tendency, where fibroid tumors, polypi, or cancer exist, to metrorrhagia.

Fluxion has its pathological as well as its physiological significance. Using the term in this relation, it takes the place of those states commonly described as "active hyperæmia" and "active congestion." As Billroth observes, "the vessels dilate or suffer themselves to be distended, under the influence of some irritation, and then quickly discharge themselves when the irritation has ceased. It may be difficult to discover the true cause, but it is generally easy to observe the phenomenon. The exaggerated afflux of blood is the reaction or the response of a vascularized part excited to irritation: "*ubi stimulus ibi fluxus.*"

If the ovaries and uterus be in an abnormal condition, whether from congestion, inflammation, displacement, from being the seat of new formations, their liability to fluxes is increased. The diseased organs will commonly be even more susceptible than the healthy to irritations which provoke the afflux of blood.

If the uterus be imperfectly involved after pregnancy, or engorged, or its tissues relaxed from other causes, this fluxion, otherwise harmless, may give rise to hemorrhages. And it is probable that the hemorrhages so arising act in some cases as an evacuant, saving the uterus from passing into congestion or inflammation.

Fluxion, then, may occur in healthy organs and in diseased organs. Therefore, when studying the pathology of the ovaries and uterus, we must bear in mind not only their actual or essential morbid conditions, but also the influence, beneficial or injurious, of accesses of fluxion to which they are liable. Fluxion is naturally a more frequent complication during the period of active sexual life. But even after the menopause, fluxions at uncertain times may recur. These fluxions, in fact, form a most important element in the history of uterine and ovarian diseases. They are the immediate occasion of some of the most distressing and dangerous phenomena. By being prepared for them, by moderating their intensity, or by preventing their recurrence, we shall often accomplish the most useful therapeutical results.

It may be doubted whether simple physiological fluxion, howsoever

<sup>1</sup> *Éléments de Pathologie Chirurgicale Générale*, 1868.

frequently repeated, will often produce inflammation of the uterus, ovaries, or their investing peritoneum. It is true that peritonitis and oophoritis are common in prostitutes, and that these events are attributable to sexual excesses. But it is certain that in many of these cases the determining cause has been the propagation of gonorrhœal inflammation, or exposure to cold or other form of violence.

The chief *symptoms of simple fluxion are subjective*. The patient feels a sensation of local heat and fulness, depending upon the turgidity of the organs affected, and the tension of the plexuses and erectile portions of the vascular system.

The fluxion may subside as quickly as it arose; and it mostly leaves the organs exactly in their previous condition, unless they were diseased; in which case the fluxion, especially if often repeated, may produce injurious consequences. Should varicose veins exist in the legs, thighs, or groins, the effect of fluxion is seen in a marked manner at the menstrual periods. The veins visibly swell, become tumid, deeper-colored. The patient is conscious of the increased turgidity. Sometimes the vessels are relieved by œdematous transudation. In this periodical œdema, which I have often observed, we may see a natural provision for relief of high vascular tension.

When fluxion occurs in morbid structures, the symptoms are commonly more severe. Pain is more marked; the sense of fulness, of weight, is more oppressive; dragging pain is felt in the loins and groins; and often sharp colic spasms in the stomach in the region of the umbilicus. In the more severe cases, and depending somewhat upon the kind and degree of the local morbid condition, the fluxion develops all the symptoms of congestion. The vascular tension seeks relief in discharges; these present themselves as hemorrhage, leucorrhœal or mucous discharges, and escape from the mucous membrane of the uterus, vagina, bladder, or rectum. These are sometimes accompanied by dysenteric and dysuric pains.

Certain general symptoms precede and attend the local phenomena. The premonitory signs may be defined as an exaggeration of those which mark the approach of the ordinary menstrual molimen. There is a state of tension marked by a chill or even by a rigor, by spasm, vague nervous phenomena, irritability or depression of temper, restlessness, perhaps hysteria.

The attendant signs are the reactionary phenomena which reveal the participation of the organism in the distress of the ovaries and uterus. There is an exasperation of the nervous erethism, with circumscribed pains in certain parts, neuralgia, gastric disturbance, headaches; and, lastly, when the fluxion is often repeated, or has continued an unusual time, there occur what seem to be blood-determinations to the head and lungs.

The *objective signs* are: distension of the hypogastrium, increase of heat, and slight development of pain on pressure. The vagina is relaxed, perhaps secreting mucus; the uterus is increased in bulk, lower in the pelvis, and is tender to the touch. The variation of volume observed in the uterus is at times very great. For example, in a case of anteversion I have felt the uterus, at the time of the menstrual fluxion, assume twice its usual size, and return to its ordinary bulk as the fluxion subsided.

The neck of the uterus feels softer, swollen. For the time the mucous membrane of the uterus and vagina is of a deep-red color.

Courty describes a *chronic fluxion*. But it appears to me that the essence of the idea of fluxion is an active transitory flow. When the vascular tension of a part becomes permanent, there is either hyperæmia or congestion.

The *treatment* of fluxion will, of course, be determined by the degree of the affection, and by the condition of the organs to which the fluxion is determined. Even the ordinary physiological fluxion of the menstrual period requires some management, for influences, otherwise harmless or even beneficial, may, as is well known, act at this time injuriously. The treatment consists in the observance of hygienic precautions, and these may be almost summed up in the one word, "Rest." During this time no operation that can be safely postponed should be performed.

The treatment of fluxion in diseased organs resolves itself in part in the special treatment adapted to relieve the disease. But the fluxion itself demands special management. The periodical fluxions of menstruation we ought to be prepared for. "Rest" here is even more important than in the simple fluxion. But the irregular fluxions, provoked by accidental emotional and local irritations, cannot always be foreseen or guarded against. Familiarity with the idiosyncrasy and surroundings of the patient, however, will often enable us to avert some of these irritations.

We have the indication of one natural mode of relief of fluxion in the hemorrhage of menstruation; and of another in the quiet subsidence of the local vascular excitement. If the fluxion occur at a menstrual epoch it will be pretty sure to seek relief in hemorrhage by an exaggeration of the normal menstrual flow. It will rarely be necessary to take measures to excite or to increase the flow. It will more often be necessary to moderate it; for it is one of the remarkable phenomena of hemorrhage that when once begun fluxion is determined with increased force towards the organ whence blood finds a ready escape. The bleeding organ seems to acquire the faculty of attracting more blood from the aorta only to pour it out of the system. The heart becomes excited, and acts with greater force and frequency. The chain of the circulation is broken. The blood escapes at the capillaries instead of being carried on to the veins; and in some cases, perhaps many, there is reason to believe that the raptus towards the accidental outlet is so active that blood is even drawn towards it in a retrograde course from the veins. These phenomena are nowhere so well marked or so easily observed as in the hemorrhage of the gravid, puerperal, and diseased uterus. The treatment of hemorrhage is considered elsewhere. Our only point here is how to manage the fluxion. There is one very effective agent in turning away the fluxion from the organ predestined to be its seat, which it is almost hopeless to recommend at the present time. The doctrine of *revulsion* teaches that we may divert the torrent of the circulation from an organ towards which irritation conducts it, by setting up an artificial fluxion to another part. This is most certainly effected by venesection. This principle of controlling the circulation was, perhaps is, in great repute on the Continent. I have frequently seen it most beneficially acted upon by Lisfranc. A small bleeding from the arm, timely practised, may not only save a

greater effusion, by turning aside the current from the morbid surface, but by lessening the vascular activity in the diseased organ, may check the progress of the disease.

The condition of usefulness from bleeding depends upon the observance of the principle of revulsion. The bleeding must be practised at a distance from the organ we want to relieve. It need not be large in amount. A few ounces drawn from the arm by venesection or from the temples or nucha by leeches, will commonly suffice. It should, however be remembered that all fluxions are not alike benefited by this treatment. It is especially useful in young plethoric persons; and when the fluxion is recent or only impending. It is also useful in some cases of more languid fluxion in women, laboring under hepatic difficulty, or heart disease disposing to portal obstruction.

Another form of revulsive treatment, less powerful, and more likely to commend itself to current ideas, consists in causing derivation to the skin or intestinal canal. By epispastics, by blisters, or fomentations, we can excite some degree of local afflux to a distant part of the body. By purgatives we can cause a derivation to the intestines, and take off some degree of vascular tension, by drawing off a portion of the watery element of the blood.

A revulsive recommended by Hippocrates, is the application of dry-cupping to the breasts. The illustrious father of medicine well knew the sympathy which existed between the breasts and the ovaries and uterus. This idea has in recent times been applied by the Germans and the late Dr. Rigby, to excite the uterus to contract after labor, and by Scanzoni, who sought to provoke labor by thus stimulating the breasts. Courty speaks highly of the efficacy of dry-cupping the breasts to obtain the revulsive effect we are discussing. I am able to give a qualified approval to the practice of Rigby. That of Scanzoni has been condemned by the results of observation. The irritation of the breasts, whilst not always fulfilling the purposes in view, not seldom caused inflammation and abscess. I should fear similar accidents from Courty's practice, especially as he insists that the method, to be useful, must be kept up for several hours, even days. It is further open to the objection that irritation of the breasts is likely to excite fluxion to the uterus, and thus to cause the very accident it is sought to avert. Again, it is not desirable, for obvious reasons, to irritate the breasts in young women.

Certain medicines possess the valuable property of allaying and regulating vascular excitation. Of these the most useful are the acetate of ammonia, nitrate of potash, tartarated antimony, aconite, digitalis, veratrum, salicylic acid.

A very useful formula is—R *Liquoris ammoniæ acetatis*, ℥ iij. ; *nitratiss potassæ*, gr. xv. ; *vini antimonialis*, ℥ xv. ; *infusi digitalis*, ℥ ij. ; *aquæ*, ℥ j. M. This dose may be taken every three or four hours. It determines to the skin and intestinal canal; it may possibly provoke nausea or vomiting, but this has a powerful influence in checking hemorrhage.

2. *Hyperæmia* must, I think, be distinguished from fluxion on the one hand, and from congestion on the other. It is a continuous or chronic fulness of the vessels of a part which does not necessarily imply morbid action in that part, but which at most leads to languid, passive changes.

Hyperæmia occurs especially in connection with excessive menstrual congestion; the uterus is full of blood, dark-red, swollen, softened; the mucous membrane is injected, red, swollen, with a spongy, flocculent aspect from the development of its uterine tubular glands, softened and bleeding.

The development of the uterine glands is at times quite extraordinary. Rokitsansky saw in the body of a girl, who died in course of typhus whilst menstruating, the mucous membrane, especially on the posterior uterine wall, dark-red, and converted into a thick stratum of villous-looking folds packed together, in which the uterine glands were elongated to 6''' or more. I have specimens of dysmenorrhœal decidua showing the same thing.

In the course of typhus, cholera, typhoid, the exanthemata, scurvy, hyperæmia of the uterine mucous membrane occurs.

The uterus becomes hyperæmic and swollen when the pelvic system of veins is overloaded, and especially when flexions or displacements of the organ exist. In the latter cases, the hyperæmia is most marked in the anterior or posterior wall.

New formations cause and keep up hyperæmia, sometimes more marked in the uterine substance, sometimes in the mucous membrane. It also occurs in heart disease, in obstructions to the return of blood through the vena cava. Often, it principally affects the lower segment of the cervix and the vaginal-portion.

Persisting hyperæmia leads to persistent secretion of mucus, and to hypertrophy of the uterus, commonly of the eccentric form; to hypertrophy of the vaginal-portion, with predominance of the connective tissue; and thence to induration, the so-called *infarctus*. Hyperæmia disposes to œdema of the tissues and to hemorrhage. The hemorrhage takes place from the mucous membrane into the uterine cavity as the expression of hyperæmia. The outpoured blood flows away, or sometimes, even without marked obstruction of the canal, forms clots, or one, which compressed takes the form of the uterine cavity.

There is often a chronic pelvic hyperæmia in aged women, leading to hemorrhage. The hyperæmia is mostly due to portal obstruction and to the general want of vascular tone arising from obesity and want of exercise. This state may induce softening, fragility of the uterine substance, and fragility of its vessels.

Its seat is the fundus, and especially, almost exclusively, says Rokitsansky, the posterior wall. The soft uterine substance looks black-red, infiltrated with blood so as not to be recognizable, and blood is seen in variable quantity in the tissues when section or rent is made. The mucous membrane is commonly in the same condition; and often blood is found in the uterine cavity (the apoplexia uteri of Cruveilhier).

If the vaginal-portion be examined by the speculum it is seen to be swollen, dark-red, and the whole vagina commonly exhibits the same appearance. There is a sense of weight and heat; often some degree of prolapsus; and also a troublesome form of pruritus.

Considerable improvement sometimes follows a spontaneous hemorrhage; and hyperæmia being essentially a passive condition due to superior obstruction, a few leeches applied to the os uteri will occasionally be ser-

viceable. But our chief effort should be directed to correcting the condition of the central organs of circulation and digestion, to restoring the general health, and to removing any uterine complication.

3. *Congestion or engorgement* of the uterus and ovaries. This condition implies a more prolonged fulness of the vessels than mere fluxion; it rarely exists without some amount of retardation of the blood in the vessels, that is, hyperæmia; and this retardation almost certainly entails more or less effusion of the serous or aqueous elements of the blood into the tissues of the organs affected. This implies swelling or tumefaction. Once set up, this condition is extremely liable to persist. The frequently dependent position of the organs favors the accumulation of blood in them, whilst their liability to fluxes, under the influences already mentioned, is a constant source of aggravation and impediment to cure.

Congestion may arise from many causes. If the organs are caught whilst under the influence of physiological fluxion by constitutional shock, by exposure to cold, or protracted fatigue, fluxion may pass into congestion.

Congestion of the uterus very frequently takes its rise in the state of imperfect contraction and involution following pregnancy and labor. The relaxed tissues and dilated vessels form a ready receptacle for the blood, and the want of tone and contractility obviously favors its retention.

Whatever the cause of congestion, it is soon aggravated by displacement of the womb. Implying, as congestion does, increased bulk and weight, and attended, as it almost necessarily is, by relaxation of the structures which ought to support the womb, this organ almost invariably sinks lower in the pelvis, or its body falls backwards or forwards.

The effect of displacement is almost surely to add to the congestion, or to induce it. Take, for example, the case of anteversion or retroversion. Under the repeated rushes of ovulation, of sexual relations and other causes, congestion is brought about by the obstruction which the displacement interposes to the return of blood. The body of the uterus rolled over on its transverse axis in the broad ligaments, twists, distorts, and compresses the vessels at the point of entry and exit. Blood still enters the uterus by virtue of the propelling *vis à tergo* through the arteries; but the veins, thin-walled, flaccid and valveless, rendered tortuous and compressed, afford but a difficult return. This state gives rise to what French authors distinguish as *engorgement*, but which it seems more convenient to describe as a phase or consequence of congestion. It is difficult to imagine that pure congestion can long exist without giving rise to the infiltration of tissues which constitutes engorgement.

Uterine congestion complicates, or plays an important part, in a large proportion of cases of uterine disease. It constitutes one of the most serious obstacles to their cure. It tends, by its very conditions, to perpetuate itself. It exhibits little or no tendency towards spontaneous recovery. The organ in which it occurs is rendered permanently larger, its tissues are infiltrated with serum or semi-plastic extravasations, its contractile force, the tonicity of its vessels are impaired; the blood brought to the uterus, either by the ordinary distribution or by intermittent fluxions is delayed; a kind of hæmostasis is induced; and these conditions are aggravated by time, by the increasing mechanical impediment to the