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WHAT ARE THE RATIONAL LIMITATIONS OF INTRA-UTERINE THERAPEUTICS?*

BY ANDREW F. CURRIER, M. D.

It seems scarcely credible that the opinions and practice of gynæcologists should differ so widely as to the propriety and utility of invading the cavity of the uterus for therapeutic purposes; for it is the difference between the very small number who do not enter it at all and hence, virtually at least, deny the existence of diseased conditions of the uterine mucous membrane which are amenable to local treatment, and those who enter it with the same freedom with which they would enter any of the accessible cavities of the body. Now the situation and structure and functions of the uterus are such as to suggest the minimum of interference, and yet experience amply proves the great advantages to be derived from interference in certain conditions. This is not a matter of opinion but of demonstration. The uterus is so divided at the os internum as to consist practically of two distinct organs. Obstetricians have long recognized this fact, and also the protective influence exercised by the cervix upon the body of the uterus in the pregnant state. Bennett, in his scheme of uterine pathology, considers the cervix of such importance that he traces most vari-

* Read before the Medical Society of the State of New York at its eighty-fourth annual meeting.

eties of uterine disease to disturbance in its structure. As Johnstone has said (Trans. of the Am. Gyn. Soc., xii, 275), it has a different blood supply, a different nerve supply, a difference in the direction and quality of its muscular fibers, and a radical difference in the structure of its mucous membrane; in fact, the two parts of the uterus have entirely separate functions. It would therefore seem rational to consider separately the therapeutics of the cervix and that of the body of the uterus. This involves a preliminary consideration of the pathology of each. The mucous membrane of the cervix uteri is compared by Johnstone (*loc. cit.*) with that of the air passages, containing as it does dense layers of ciliated columnar epithelium which lie upon loose areolar tissue, and in which great numbers of mucous glands are imbedded. It is not without nerve filaments, for it is often acutely sensitive, and it is subject to frequent physiological vascular engorgements, its arteries and veins being thick and large and forming a kind of erectile tissue. The diseases to which it is subject are well known, and some of them have been carefully studied for many years.

For our present purpose they may be divided into conditions which are the result of simple (*i. e.*, non-traumatic) congestion, of traumatism, of infection, and of malignant degeneration. There is perhaps no condition which is more common than that which results from congestion of the cervical mucous membrane, so-called catarrhal cervical endometritis, in which the cylindrical epithelium is cast off in abundance, and the glands secrete an increased quantity of mucus. When the process is acute, leucocytes in greater or less abundance from the vessels are added and the secretion becomes more or less purulent. This hypersecretion may be so excessive as to be not merely an annoyance from constant soiling of the person and the clothing, but even debilitating, and not infrequently the cause of the most intense pru-

ritus of the skin surrounding the external genitals. These possibilities give an importance to the disease which forbids us to regard it as insignificant. The congestion in these cases may be attributable to obstruction to or sudden checking of the menstrual flow from a great variety of causes, to frequent coitus (prostitutes almost invariably suffer with the disease), to prolonged general anæmia, etc. The disease is very common in anæmic girls and in anæmic old women, being due in both classes of cases to local vascular derangements. Cysts of the cervical glands and polypi of the mucous membrane may be the product of congestion. So, too, in deformities of the vaginal portion of the cervix, in which it is indurated, conical, or undeveloped, the canal being narrow or tortuous, congestion is often an important element in producing important changes of a morbid character.

Traumatism is the source of endometritis of varying degrees of intensity, especially the traumatisms which are incidental to parturition. Whatever be the form of the injury, if the cervical mucous membrane is exposed it is subjected to constant irritation, and a granulation tissue is frequently developed which shows the ordinary characteristics of chronic inflammation. Traumatisms in connection with surgical operations upon the cervix which are inefficiently or unskillfully performed, and which do not heal properly, frequently exaggerate a pre-existing condition of endometrial inflammation. The endometritis of infectious origin is of very common occurrence. Most common perhaps is that which is associated with gonorrhœa. Infection from the bacillus of tuberculosis may also take place, and the endometritis of puerperal fever is attributable to infection from the *Streptococcus pyogenes*. It has also been asserted that there may be infection from the specific germs of typhoid fever, diphtheria, and the eruptive fevers, though I am not aware of any absolutely convincing studies which have been

made in this direction. In malignant disease of the cervical mucous membrane extensive changes in the epithelial and glandular structures take place. The mucous membrane is first infiltrated and then breaks down, the tissue being destroyed and ulcerative conditions resulting. The areas of tissue contiguous to those which have already been invaded may undergo irritation in their epithelial and glandular elements which may be regarded as a kind of infection premonitory of the condition which is to follow. In all these conditions there is little dispute as to the propriety of therapeutic measures, provided one believes in the propriety of local therapeutic measures for uterine disease in any case. It may be well, however, to regard the following rational precautions before instituting any plan of treatment, whether simple or extensive :

I. When menstruation is imminent or present, treatment should be withheld. An exception to this rule would obtain should the flow be very profuse or protracted.

II. In the presence of an acute inflammatory process intra-uterine treatment should be withheld. For example, in the acute stage of gonorrhœa or with acute peritonitis this rule should be observed.

III. In malignant disease of the cervix the possibility of severe hæmorrhage attending local treatment of whatever character must be anticipated and provided for.

IV. In all cases the risk of inflammatory reaction in the pelvic structures remote from the cervix must be taken into consideration.

With these precautions in view one may consider the following category of cases in the order of their severity :

1. Those which are suitable for local applications of an astringent or caustic character, including electricity.

2. Those which are suitable for the dull or sharp curette.

3. Those which are suitable for plastic operations.

4. Those which are suitable for extensive removal of tissue.

The first class of cases will include the catarrhs which are without serious symptoms. In many of them there is no need of local treatment other than the systematic use of vaginal douches, and it must not be overlooked in any of them that there may be a constitutional cause which is the original source of the local trouble. It may be added by way of parenthesis that vaginal douches should constitute a feature of the toilet of every woman, though, of course, specific directions are appropriate for each case. If the glandular secretion is very profuse, various solutions may be of use to coagulate it and to stimulate the glands to more healthy action. A powerful solution is preferable, and I do not remember to have ever seen harm result when the application was limited to the diseased cervical mucous membrane. Solutions of persulphate of iron, nitrate of silver, iodine, carbolic acid, antipyrine, and even nitric acid, chromic acid, and chloride of zinc, may all be used with advantage in quite a concentrated form. Such applications repeated every two days will soon correct the diseased conditions, though they may not produce a radical cure. The same end may be obtained by a few applications of a galvanic current of low tension, the positive electrode being introduced within the cervical canal. In the exaggerated conditions of chronic endometritis great satisfaction may be derived from the use of the curette—the dull curette for the less severe and the sharp one for the more severe cases. It is surprising to see how great a quantity of retained secretions can sometimes be scraped out of the cervical canal, and also the promptness with which contraction of the tissues and a normal condition of secretion supervenes. For infectious endometritis, more particularly the gonorrhœal

variety, the indication is, of course, to use a germicide, and in the treatment of a great many cases I have never found anything which would equal the nitrate of silver. I use it habitually with the utmost satisfaction in a watery solution containing sixty grains to the ounce.

If the cervical mucous membrane is extensively exposed—in other words, if ectropion exists—the application of astringents or caustics, or even the use of the curette, is but palliative; it is better to excise the entire mucous membrane after Schröder's method, or do a modified amputation of the cervix according to Hegar's method, or perform Emmet's operation of trachelorrhaphy.

In the cases of malignant disease of the cervical mucous membrane it often happens that extensive scraping with the sharp curette is all that can be done, on account of the extent and severity of the disease. If the disease is still in an early stage, a radical operation should be performed, and it is logical to believe that with a morbid condition which develops as does cancer, the more tissue removed the greater the probability of passing beyond its utmost limits—that is, extirpation of the entire organ would seem to be a rational procedure in all cases in which it is feasible. It must be admitted that the ultimate results of this operation have not been as favorable as was hoped. Cysts and polypi should be removed in accordance with customary rules of surgical procedure in such cases, and this applies alike to polypi developed from mucous membrane and those which are composed of fibrous tissue.

The utility of dilatation may be considered beyond the limits of discussion, but it is very questionable whether the free use of the powerful and dangerous instruments which are now so much in vogue indicates a healthy medical opinion. Without stopping to mention in detail the dangers attending the use of such instruments in inexperienced

hands, I would advise those who are general practitioners neither to use nor to possess them until they have thoroughly familiarized themselves with the resisting power of the uterine muscle by the use of the graduated uterine bougies. I can not recall a case in which it has not been possible to obtain all the dilatation which is requisite by the use of these less dangerous instruments.

The os internum forms a natural barrier to the cavity of the body of the womb. It is the innermost portal of the sanctuary, for what portion of this human "temple" can be more sacred than that in which are developed the beginnings of life? It is the limit beyond which, in many cases, neither germs vital nor morbid ever pass. It has a sphincteric action, which is manifest enough at times when one endeavors to penetrate it with a probe or sound, the sphincter being formed by the Z-shaped fibers of Sappey, which are longitudinal in the cervix and transverse at the os externum and the os internum. It has also several fasciculi of longitudinal fibers in the anterior and posterior walls of the cervix, which have been described by Désormeaux and Jacquemier (see *Nouv. arch. d'obst. et de gyn.*, May, 1889, p. 214). This knowledge of the structural anatomy is important, because it explains the resistance which is often encountered when the uterus is sounded. Its extreme sensitiveness in nulliparous women, and the extensive radiation of pain which may follow its irritation, are matters of frequent observation, and this suggests the observation that the use of a fine, flexible probe for sounding the uterus is quite as efficient in most cases, and far less likely to provoke pain and other undesirable conditions, than the use of sounding instruments of larger caliber. It may also be pertinent to emphasize the necessity of introducing only aseptic—that is, clean—instruments into the uterus, for it is the use of dirty instruments which is largely

responsible for the prejudice which exists against intra-uterine therapeutics in general. Instruments which are surgically clean will rarely cause or increase disease. The therapeutics of the mucous membrane of the body of the uterus involves entirely different considerations from those which concern the neck. Here we are approaching the danger line. The subject is one on which the best minds have differed radically. The question of diagnosis is often a very difficult one to settle, and the great importance of the matter is ample excuse for a repetition of what may be familiar and well worn to all my hearers. The mucous membrane of the body of the uterus, both in its physiological and pathological states, has been the subject of the most careful investigations by some of the most competent contributors to medical science. One has but to mention the names of Leopold, Ruge, Williams, Kundrat and Engelmann, Möricke, and Wyder to substantiate this assertion. It is from this membrane that the decidua of pregnancy is developed, and with each recurring menstruation it is exfoliated to a greater or less extent, to be immediately renewed for a subsequent menstruation, or the development of a decidua for a fecundated ovum. Without attempting to harmonize the points of histological controversy in the matter (for an exhaustive analysis of which, see series of papers by Dr. Mary Putnam Jacobi on Studies in Endometritis, *Am. Jour. of Obst.*, 1885), we may accept as a working definition that it is composed of a network of areolar tissue, in which is imbedded ciliated columnar epithelium. It also contains simple and branched tubular mucous glands in great number, the lining epithelial cells of which are continuous with the epithelium at the surface of the membrane. There are also in the structure lymphatic spaces with endothelial lining (Leopold), or, according to another observer (Schmitt), lymphoid corpuscles, or, according to another (Meyer),

lymphoid corpuscles resembling endothelia. The mucous membrane is attached to the underlying muscular parenchyma by bundles of connective tissue which carry its nutrient blood-vessels. With a lining epithelium which is easily eroded, delicate blood-vessels which are easily ruptured, and a thousand open mouths of lymphatics which lead directly to the peritonæum, it may be readily understood why this wonderful tissue is so subject to disease, and the medium by which disease is transmitted to other parts. All the elements of this tissue—epithelium, glands, connective tissue, blood-vessels, and lymphatics—may be involved in disease processes, and, according to certain French and German observers, extensive disease seldom if ever attacks it without also involving the underlying muscular parenchyma (see Lumpe, Wiener klin. Woch., 1888, i, 696; Siredey, Dict. de méd. et de chir. prat., p. 631, article Métrite; Doléris, Nouv. arch. d'obst. et de gyn., 1887, p. 100; hand-books of De Sinéty and Courty). It may occur in children as well as in adults, especially in connection with the eruptive fevers (Siredey, *loc. cit.*). It is common alike in puerperal and non-puerperal women, and may be due, as in disease of the cervical mucous membrane, to congestion (non-traumatic), to traumatism, to infection, or to malignant disease. It is far less common than cervical disease, though there is great difference of opinion in respect to its frequency.

Thomas (*op. cit.*, chapter on Chronic Corporeal Endometritis) sustains the assertion which I have made, and quotes Bennett, Byford, and Tilt as also sustaining, West and Aran as opposing it. Its chief symptoms are pain, hæmorrhage, and glandular discharges; but these are not invariably present, and other symptoms—such as general debility, sterility, and reflexes of varying character—have a more or less intimate relationship with it in many instances.

The use of the term chronic endometritis for this condition (excluding the neoplasms), when it is of long duration, is rather a matter of convenience than of accurate nomenclature, for in many of the cases an inflammatory process does not exist. I am convinced that many errors of diagnosis are made by depending too much upon the discharges which proceed from the uterus. It is comparatively an easy matter to exclude discharges of cervical origin, but very difficult to exclude those which proceed from the tubes in making a diagnosis from this symptom. In view of the great frequency of suppurative salpingitis, it is not improbable that many cases of that disease have been hastily diagnosed as endometritis. A similar error may be made with reference to hæmorrhage from or sensitiveness of the uterus. The former may be due to tubal disease, or to malignant disease apart from the uterus (*e. g.*, in malignant disease of the omentum or mesentery); the latter may proceed entirely from peritonitis. It is important to know whether the disease is primary or secondary. In the latter case intra-uterine treatment is frequently contra-indicated. General debility, anæmia, and the continued and eruptive fevers may be accompanied with symptoms of endometritis which do not demand local treatment, especially in the young and unmarried. Until civilized society is constituted differently from its present arrangement, we are bound to pay a certain amount of deference to prejudices in this direction.

Non-traumatic congestion is responsible for many of the cases of so-called chronic endometritis, and this may proceed from many sources. Uterine displacements interfering with the venous circulation, atresia of the canal, congenital or acquired, the influence of remnants of retained placenta or decidua, fibroid tumors contiguous to the endometrium—these and many other causes may result in congestion leading to hypertrophy or hyperplasia of the

mucous membrane, to polypoid, or papillary, or villous excrescences, retention or excess of glandular secretions, with more or fewer of the symptoms to which allusion has already been made.

Traumatism is a less common cause of endometrial disease. It has been a question with some of the advanced advocates of the influences of infection whether traumatism alone ever produces inflammation. In my own mind, there is no doubt that it may. Aside from the question of unclean hands and instruments, we know there are many individuals with whom the health poise is in such a condition of unstable equilibrium, often from excessive sensitiveness of the nervous system, that any unusual irritation of the uterine mucous membrane will cause most violent reaction.

The traumatisms of parturition, of surgical operations upon the uterus, and the occasional effect of powerful caustics to the endometrium may be mentioned among the possible causes of disease of this structure.

Infection is a most prolific cause of the condition under consideration, and the peculiar construction of the mucous membrane which has been referred to renders it a very attractive field for infectious agents. Perhaps first in importance are infections which occur during the puerperal period, especially in cases in which the fœtus is cast forth prior to maturity. In such cases, unless intelligent anti-septic treatment is resorted to, the consequences may be very severe. How many cases of endometritis, either uncomplicated or combined with disease of the annexa, are traceable to want of proper care after an abortion or a labor at term! The infection of gonorrhœa and syphilis, especially the former, may result in very decided inflammatory lesions of the endometrium, and the profession at large is only beginning to realize the significance of this disease in the pain, the sterility, the peritonitis, and the prolonged

endometritis which it so often causes. Other infectious diseases—tuberculosis, diphtheria, and the eruptive and continued fevers—have been demonstrated to be causes of endometritis. It is evident that in all such cases the cervical mucous membrane is first attacked, the process then extending to that of the body. It must be admitted that it is often difficult to trace a disease of the endometrium to any one of the three ætiological elements—congestion, traumatism, and infection—as they are often combined. They may also be implicated to a greater or less extent when malignant disease is present, but the presence of this disease can usually be ascertained by the aid of the microscope, when clinical signs are wanting in positiveness. I say *usually*, for there are transition periods from the benign to the malignant, when an exact diagnosis is impossible, and a correct diagnosis may be equally impossible from the portion of tissue which is obtained for examination. Malignant disease of the endometrium may take the form of sarcoma, carcinoma, or adenoma, and it is far less common than malignant disease of the cervix.

A great deal of ingenuity has been displayed in classifying and subdividing the various forms of endometritis with reference either to clinical or anatomical peculiarities. I can not see that such a multiplicity of distinctions serves any useful purpose, certainly when therapeutic procedures are under consideration. Thus we have *e. dysmenorrhœica* (Schröder, see *Handbuch der K. der weib. Gesch.*, 6. Aufl., p. 110); *e. chronica hyperplastica* (Récamier, Nélaton, Olshausen, *Arch. f. Gyn.*, viii, 97; Heinricius, *Arch. f. Gyn.*, xxviii, 161), which is the most fitting and appropriate of all these terms; *e. hæmorrhagica* (Schröder), in which hæmorrhage is the conspicuous symptom; *e. decidua* (Schröder) in cases in which there is inflammation of the endometrium during pregnancy, and which usually termi-

nates in abortion; e. polyposa, e. villosa, and e. fungosa, which are sufficiently indicated by the term chronic hyperplastic endometritis.

Ruge (*Zeitsch. f. G. u. G.*, v, 317) differentiates upon an anatomical basis e. interstitialis, e. glandulosa, and e. mixta, and Schott (Volkmann's *Sammlung*, No. 161) describes e. menstrualis and e. menorrhagica. The rare forms e. atrophica and e. desiccans, in which there is extensive exfoliation of the endometrium, even including muscular tissue, are also described.

The question of treatment, to which all the foregoing is subsidiary, is one which abounds in contradictions quite as much as do the questions of anatomy and diagnosis. At the meeting of the American Gynæcological Society in 1879 papers upon this subject were read by Dr. White, Dr. Battey, and Dr. Jenks, and discussed by Dr. Sims, Dr. Thomas, Dr. Bozeman, Dr. Goodell, Dr. Mundé, Dr. Reamy, Dr. Howard, and others. The first three expressed conservative views as to the propriety of intra-uterine applications for endometritis, though Sims and Thomas were advocates of the curette. The others advocated great freedom in intra-uterine treatment. Emmet's strong objections to any form of intra-uterine therapeutics, with the exception of the very infrequent use of the dull curette, are well known. Among French gynæcologists all forms of intra-uterine treatment are in vogue, more particularly the use of the curette, under the influence of the teachings of Doléris. In Germany the tendency is also toward great freedom in intra-uterine treatment, Lumpe being almost alone (*Wiener klin. Woch.*, 1888, i, 696) in taking a stand which is only slightly less positive than that of Emmet. In almost all the other countries of Europe the curette is in favor, with more or less adherence to the use of powders, pastes, solutions, and irrigations. Heinricius (*loc. cit.*) has made a

very complete and detailed statement as to the advocates of the different methods of intra-uterine treatment which will be found very interesting and instructive. The literature of the subject is large, and one can find almost any phase of opinion which is desired. My own opinions in this matter are as follows :

I should divide the subject of intra-uterine therapeutics into three parts, the first of which will include treatment by irrigation, the second treatment by the use of solutions, pastes, or powders, and the third treatment by the curette. In any case it is desirable that the uterine cavity be sufficiently dilated to secure free exit of all fluids, hence artificial dilatation will frequently be of service. The use of tupelo or laminaria tents *with proper precautions* is often desirable. I have never seen any harm from their use. The use of stem pessaries is objectionable in most cases. I have seen much harm result from the irritation which they cause, and have discarded them entirely. If there is great displacement of the uterus, drainage will, of necessity, be imperfect. Capillary drainage may be effected by the occasional use of a thin tent of iodoform or bichloride gauze, which should not be retained longer than two days. In puerperal cases irrigation with hot antiseptic solutions will frequently be of the greatest value, with or without the use of the curette. Since this method was revived by Winckel and von Gr newald it has been extensively adopted. The possible dangers are more than counterbalanced by the advantages to be gained. Either the Chamberlain glass tube or the Bozeman-Fritsch double catheter will be found very serviceable in performing this operation. In non-puerperal cases irrigation alone is seldom indicated. If curetting has been performed, the detritus may be removed by irrigation, care being taken in all cases that there is a free outflow of all the fluid introduced. Continuous or frequent irrigations,

which have been zealously advocated in certain quarters, involve much disturbance of the patient, are usually unnecessary, and are not without considerable danger. Intra-uterine treatment by means of pastes, powders, and solutions is not of general utility. In puerperal cases in which there is a suspicion of sepsis a pencil of iodoform in the uterine cavity is highly approved by some excellent authorities. Applications of powerful astringent and antiseptic solutions may also be made upon the mucous membrane in such cases with considerable advantage, especially after the membrane has been curetted. In non-puerperal cases hæmorrhage may be checked by the application of astringent solutions and powders, and pain may be relieved. Pastes and unguents are often useless, as they may not be dissolved, are often inert, and may even be highly irritating by their long-continued presence in the cavity. Of course there are cases in which they are beneficial, but in general this is not a useful method of medication. In hyperplastic endometritis, for which the method of treatment under consideration is most frequently employed, it must be remembered that though benefit may be derived by it, such benefit is only palliative in the great majority of cases, the source of the trouble remaining.

This brings us finally to the subject of treatment with the curette, which is more radical and more frequently curative than any other method. The curette is primarily an instrument for diagnosis; it is a prolonged finger, and as it is gently passed over the mucous membrane it informs us with accuracy whether any condition exists which requires active interference. In puerperal cases it is invaluable for the removal of bits of placenta or shreds of decidua which might result in great mischief. A softened and thickened endometrium which may have been the cause of an abortion can be scraped and stimulated to healthy action by its assist-

ance. If the membrane is thickened and congested from the presence of a fibroid tumor, a careful curetting will relieve hæmorrhage, perhaps for a long time. If there is bleeding on account of a villous, or papillary, or fungous condition of the endometrium, curetting will relieve it almost to a certainty. The same condition may be relieved by the galvanic current, but not more efficiently as a rule. If the mucous membrane is merely thickened or hyperplastic, a careful curetting is the most efficient way to stop the supersecretion of the glands and remove other symptoms dependent upon the condition. In malignant disease of the endometrium the curette is of the greatest value if a radical operation is not to be performed. It is well to follow its use with that of the actual cautery, or a powerful caustic like the chloride of zinc. As to the form of the curette to be used, the dull wire may be employed if the tissues to be removed are not dense or abundant, but it bends readily and is comparatively useless if the disease is very extensive. The sharp steel curette is an instrument which is not without great danger, but, if one remembers this fact and understands the tissues he is operating upon, it will often prove invaluable—a friend from which one would not readily part. Auvard has recently devised an instrument with which curetting and irrigation can be performed at the same time, and the *écouvillon* or bristle brush of Doléris, with which the *débris* from curetting can be removed, is well known. Neither of these instruments has come into general use in this country.



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