Certain Causes of Sterility in the Female

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THEIR TREATMENT.

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STERILITY in the female is one of the most unsatisfactory subjects, as regards therapeutic results, for which we may be consulted. Rational treatment demands correct diagnosis, and correct diagnosis necessitates the proper estimation of the causal factor, or factors, of a disease. In the face of sterility the physician is called upon for the exercise of all his judicial powers, and not infrequently even then he will fail in detecting a tangible cause against which he may bring to bear his therapeutic battery.

By sterility in the female I mean absence of evidence of conception after at least three years of married life in a woman who is not prevented from conceiving by any appreciable vice in conformation, congenital or acquired. Statistical data have amply proved that no woman is entitled to be called sterile until after the lapse of at least three years from marriage, The presence of imperfections in the genital organs, constituting *per se* a bar to conception, are not amongst the causes of sterility which I propose to consider here. These may be remediable by art, but I purpose solely to sketch the causes and the treatment of sterility in women who present no strikingly apparent reason why they do not conceive, and in whom, as far as we can detect, the ovaries and the tubes functionate normally. At once then, in addition to imperforate vagina, cervical canal, or uterus deficient in size, I exclude from consideration those causes which have their outcome from inflammatory affections around the uterus. The sterile woman I am writing about has not an adherent uterus, and, so far as careful bimanual palpation justifies the assertion, has normal oviducts and ovaries.

In the estimation of the possible causes of sterility in any given case we should always remember that the husband may be at fault, and not necessarily the woman. Gross tells us that in one out of six cases, at least, lack of fertility must be credited to the husband, and, therefore, in any abscure case, the semen must be submitted the microscope before we will be in a position to treat the wife intelligently, or to tell her that the fault is hers, and very likely not remediable. A point about the semen worth remembering is that it may contain active spermatozoa, and yet not be efficient for fecundation. Pajot, of Paris, has pointed out that anomalies in shape of the spermatozoon may incapacitate it from subserving its purpose.

Supposing now the semen to contain active and comely spermatozoa, and therefore probably healthy, we are justified in believing the man capable to fecundate, and must seek for the cause of sterility in the woman. What now are the most obvious causes, and how, if at all, may they be relieved?

Two broad divisions may be made: the *pschychic* and the *physical.* Pschychic causes may be dismissed in a few words. Neither desire nor pleasure are essential to fertility. Impregnation whilst the woman is under the influence of an anæsthetic, conception from forced intercourse or rape, in other words, fertility under conditions when both desire and pleasure are absent being possible, we are not warranted in saying that absence of these qualities will explain sterility. Whilst we may say, generally, that the sexual appetite favors fertility, the reverse is not strictly true, and it is really to the physical causes we must look for explanation of the absence of fertility, whether the sexual appetite is normally developed or not.

The physical causes of sterility, the treatment of which I propose to consider, are:

Repeated congestion of the pelvic organs.

Displacements or distortions of the uterus.

Abnormal shape and size of the cervix and its external orifice.

Abnormal discharges from the uterus, cervix and vagina.

Faulty development of the vagina.

Repeated Congestion.—Paradoxical as it may seem, miscarriage is a frequent cause of sterility! The fecundated ovule, in order that it may grow and may thrive, needs a healthy soil even as does the seed from which the tree or the cereal is to develop. All causes which lead to repeated congestion of the uterus in partic-

ular, so modify the mucous membrane which is to assist in the formation of the decidua, so alter, in other words, the soil in which the egg is going to engraft itself, that this mucous membrane proves unfit for the egg's growth, and therefore it dies, even though fecundated, and passes away, usually at the next menstrual period. Thus then the woman is sterile, and remains so, although she possesses the capacity of reproduction, and requires purely, perhaps, organic quietude, so to speak, in order to make visible this capacity in its full maturity, in order, that is to say, to be ranked as fertile instead of as sterile. Our paradox is therefore explained, and the sterility of many a woman exists only from the fact that she does not herself give her uterus an opportunity to display its ability to bear the ovule, which is duly fructified, but dies from lack of proper and nutritious soil.

By far the most frequent causes of this apparent sterility are some of the ordinary means resorted to for the prevention of conception, and which it is unnecessary to here specify. Another cause, acting in particular during the early years of married life, before experience has taught the wisdom of self-restraint, is inordinate sexual commerce. Such and the like causes eventuate necessarily in chronic hyperemia of the endometrium, and later still in hyperplasia, both of which morbid states are directly inimical to fertility if not to conception.

The treatment, of course, is self-suggestive. The point I wish in particular to impress is the necessity of questioning our sterile patients closely in regard even to these sacred matters, before we are in a position to treat the condition rationally.

Displacements and Distortions of the Uterus.—It is a disputed matter as to how the spermatozoa effect entrance into the uterus in order to fecundate the ovum. Some believe that the semen is thrown directly into the cervix, the orifice of which opens in order to receive it; others claim that the spermatozoa, possessing the power of motion, find their own way into the interior of the uterus, and point to the fact that impregnation may result when the semen is simply deposited at the entrance to the vagina, as proof of their belief. Whichever of these statements be true, if either is alone, it may be broadly stated that, other factors equal, impregnation is most likely to result in instances where the uterine axis bears such a relation to the vaginal as to bring the external os in close apposition to the male urethra, that is to say, when the cervix points towards the posterior vaginal *cul-de-sac*, which has been not

inappropriately called the *receptaculum seminis*. The cervix in such a position is bathed in the pool of semen, and the spermatozoa find it a simpler matter to enter the uterus than if the cervical axis bore a different relation to the vaginal. When now, in particular, the uterus is retroverted, or in the position described by Mundé and Fritsch as one of retroposition with anteflexion, or when there exists flexion of the cervix anteriorly, then the cervix is more or less above the proper axis, and, as experience daily proves, the chances of fertility are lessened, and of sterility, relative or absolute, are increased. A similar remark applies to extreme degrees of anteversion, a condition far less commonly met with than the preceding. When we examine such patients, after many years of sterile married life, we are often struck by the great depth of one or another *cal-de-sac*, in particular the posterior. Pajot says that this increased depth is due to the fact that the male organ has made a "*fausse route*," false passage, that is to say, instead of impinging on the cervix, as probably is the case where the relations of uterus and vagina are normal, it has deepened the vaginal vault posteriorly, anteriorly, or laterally. The treatment which he recommends is somewhat peculiar, but he assures us that it has frequently succeeded in his hands. In brief, according to him, if the uterus be retroverted let the woman deliberately constipate herself for a number of days, when the distended rectum will in a measure correct the displacement, and then let intercourse take place, and the semen will have an opportunity to gain entrance into the uterus. If, on the contrary, the uterus is anteverted, he recommends retention of urine until the bladder is completely distended, the result of which is elevation and backward tipping of the fundus, during which intercourse should be had. Such methods might be successful, but I believe that there are simpler and less disagreeable ones, and these I proceed to discuss in turn.

In case of pure retroversion of the non-adherent uterus nothing is simpler than to relieve the displacement. First anteVert the uterus, and then apply a properly curved and well-fitting pessary. If, however, the uterus cannot be replaced owing to congenital shortness of the anterior or posterior folds of peritoneum which constitute the so-called uterine ligaments (I am not considered in this paper morbid adhesions), then the problem is a very difficult one, and I must confess has not been at all satisfactorily solved. Sometimes the uteruscan be raised forward sufficiently to bring

the uterine axis nearer the vaginal. This is not enough to warrant us in inserting a purely vaginal pessary, for as surely as we do the result will be the conversion of the retroversion into a retroflexion, but it is enough to justify the adaptation of the Thomas-Cutter pessary, and this instrument will keep the uterus in the position we are able to place it without being at all open to the same objection as the pure internal pessary. If, owing to the congenital vice, we are unable to replace the uterus at all, then it is my belief that the chances of curing the woman's sterility are slight, except through an attempt at artificial impregnation. Posterior discission, after Sims' well-known method, might be tried, although experience has not proved it of much value. Tamponing, however protracted, I do not believe will do more than lift the uterus and the rectum bodily upward, and also deepen the vaginal pouch.

The next form of displacement, retroposition with anteflexion, is probably more often associated with sterility as a likely cause than any other, and it is decidedly the form of all others the most difficult to remedy satisfactorily. We must do two things: Correct the retroposition, and overcome the flexion. The former we may occasionally do, but the latter—"there 's the rub." There are numerous methods extant for overcoming flexion, but that any will permanently cure the distortion I have serious doubts. Of course the intra-uterine stem may be inserted, but I am simply afraid to let any patient of mine wear a stem unless to it is attached a string, the other end of which I can hold in my hand to withdraw the stem at the first danger signal. There are far too many cases of death recorded directly traceable to the wearing of the stem pessary, and knowing how quickly pelvic inflammatory trouble may result, I have discarded the stem altogether, and thus save my patients risk and myself anxiety. Possibly the best method of overcoming the flexion temporarily, if not permanently, is by thorough divulsion under an anæsthetic. The divulsion should be to the extent of at least one and a quarter inches. The aim is not to rupture the cervix, but to cause the muscular fibres to yield to the applied pressure. A good instrument for the purpose is the Palmer, or the Ellinger-Goodell. These are strong enough not to feather at the level of the internal os, and they assure thorough and equable dilatation. Goodell assures us that in the large proportion of cases the flexion is permanently remedied. My experience would lead me to the reverse opinion, but then it has been by no means as vast as his. For true cervical flexion, where it

seems to be at the bottom of sterility, our only resource is posterior discission. It will be noted that I do not believe flexion itself to be a cause of sterility, but rather the resultant abnormal position of the cervix relative to the vagina. If flexion does not interfere with the exit of menstrual blood, it will hardly interfere with entrance of the semen.

If the conditions which I have so far spoken of are uncomplicated by others, and are remediable, our sterile patient will *sometimes* become fertile. Unfortunately, however, displacements and distortions of the uterus, when of long standing, are accompanied by hyperemia, or worse, of the endometrium, and this we have already seen is a common cause of sterility, so that our therapeutic aim will frequently be obliged to be a higher one than simple correction of version or overcoming of flexion.

Abnormal shape and size of the cervix and its external orifice.—The association of sterility with conical shape of the cervix, and with the so-called pin-hole os, has over and again been noted. It is said that the conicity of the cervix does not give the male organ a surface on which to impinge, and the size of the external os has been considered as insufficient for the spermatozoa to enter by. These explanations are utterly insufficient, however, for the reason that the uterus may occupy such a position as to allow its conical cervix to dip into the pool of semen, and yet the woman be sterile; and again, an external os large enough to admit a very fine probe, and ample enough to allow of the escape of the menses, can hardly be so small as to act as a barrier to the entrance of the spermatozoa. The true explanation of the very frequent association of sterility with these anomalies of the cervix must be sought in the fact that with the conical cervix there is ordinarily present a pin-hole os, and, in connection with both, the real cause of the sterility—an endocervical catarrh with its thick mucous plug which cannot escape by the narrow orifice and effectually blocks the road which the spermatozoa must follow in order to reach the endometrium. The treatment of these conditions, therefore, belongs properly under the one which I next consider.

Abnormal discharges from the Uterus, Cervix and Vagina.—A certain amount of discharge from the vagina is physiological, and only when it becomes excessive are women in the habit of complaining of lucorrhœa. Even a slight apparently physiological discharge, however, may be the sole cause of sterility, not so much from its presence as from its reaction. An excessively acid discharge is deadly to the spermatozoa, and in any case of sterility the cause cannot be held as estimated until by means of litmus paper the reaction of the discharge has been tested. If acid and apparently from the vagina the indication for treatment is to order a weak alkalina douche to be taken a trifle prior to sexual intercourse. The sterility dependent on the presence of leucorrhœa is very rarely, however, such a simple matter as this. Usually we are dealing with an endometritis, accompanying general hyper-

emia or hyperplasia, which condition may be met with in the nullipara, or with an endocervicitis and its accompanying erosion, or with a vaginitis, simple or specific. The treatment of these affections I aim at sketching purely in a broad manner, since my space will not admit of minute detail.

General hyperemia of the uterus is of course accompanied by catarrh of the endometrium, and if the discharge does not kill the spermatozoa, the endometrium, as we have stated, is not a fit home for the ovum. The first aim of treatment is to remove the cause and this means, ordinarily, abstinence for a certain period from sexual intercourse. Next, since the hyperemic uterus is a heavy uterus it sinks downward, and this enhances the pelvic congestion. The aim of treatment then, in addition to rest of the organ, is to relieve the pelvic and general congestion, and this aim is fulfilled admirably by the hot-douche, taken in the recumbent position, and the glycerine tampon. The hot water, if taken in sufficient quantity, lessens the pelvic congestion, the glycerine does the same by depletion, the tampon the same by holding the uterus at its proper level in the pelvis, whereby the peri-uterine circulation is equalized and the uterine hyperemia lessened. A most valuable adjuvant in treatment is galvanization of the uterus, one electrode against the cervix, the other over the fundus. If the current be mild, and it should be, it is indifferent which pole is internal. I am in the habit of using by preference the interrupted galvanic current. When, however, the hyperemia has been of long duration, the uterus has passed into the hyperplastic condition, and here, in addition to the measures already spoken of, something more is requisite, and this is repose to intra-uterine applications, and possibly the curette. The endometrium is no longer simply hyperemic. There has occurred hyperplasia of its constituent parts, and to cure, or rather to alleviate this hyperplasia, the fungosities, the vegetations, must be removed, and the inner surface of the uterus treated like other accessible mucous membranes of the body affected with a so-called chronic catarrh.

The characteristic feature of the discharge from the cervix, is its consistency. The tenacious mucous plug fills the entire canal, and it is readily apparent how it blocks the way of the spermatozoa. The cure of an aggravated case of endocervical catarrh is a most difficult matter. Thorough and persistent treatment are called for. If the external os is pin-hole, the first thing to do is to enlarge it so as to make the canal of the same calibre throughout, and not only must it be enlarged, but maintained so. The crucial incision with trimming off the edge of each little flap, as described by Mundé, will do this. The next step is to thoroughly scrape away the diseased follicles, and then to cauterize deeply, either by the fuming nitric acid, or by the actual cautery. The after-treatment should be prolonged. In these instances of endocervical catarrh I have latterly been trying galvanism, but the results so far obtained have scarcely been satisfactory.

For the discharges resulting from an inflammation of the vagina, the treatment called for will vary from simple astringent injections to direct application of strong silver solution. Where there is a suspicion that the discharge is specific in its nature, I cannot lay sufficient stress on the necessity of meeting it with most radical measures before it has spread beyond the vagina. It is here, in particular, that I believe solutions of nitrate of silver, one-half drachm to one ounce, are most efficacious. They have been proved directly destructive to the coccus, which, it is claimed, is the cause of virulency. Of gonorrhea as a cause of sterility I cannot speak further. I would only add that observers throughout the world are coming to believe with Noeggerath that it is a very common one.

Faulty Development of the Vagina.—By this I mean those vaginæ which are lacking in depth, and the result is the non-retention of semen. Close questioning of our patient is absolutely necessary to determine this cause of sterility, and yet it is a relatively frequent one. The woman will tell us on direct questioning, but hardly otherwise, that on withdrawal of the male organ the semen follows. Unless in these instances, therefore, the semen be directly ejected into the cervix, the woman's chances of sterility are great. The remedy is in taking the necessary measures to cause retention, and in addition to those suggested by Marion Sims, it is a good plan to direct the patient to push a cotton tampon into the vagina as the penis is withdrawn.

Such, then, are the most common causes of sterility, and yet this subject, of such prime importance, has been by no means exhausted. Now, if in a given case we have corrected version and flexion, have cured the pathological factors which cause discharges, and yet the woman remains sterile, what is to be done? If the woman is excessively anxious for offspring, artificial impregnation may be attempted, although but few women will accede to the attempt, and the physician is naturally loth to insist upon it. The method has succeeded about a dozen times when the syringe has been used, and Rheinstaedter, of Cologne, has been successful in as many more by dipping a cotton-wrapped probe in the semen and then passing it into the uterus. This method is open to the charge that the probe may have simply removed a plug of mucous and thus rendered impregnation possible at the succeeding copulation. The most that can be said, however, relative to artificial impregnation, is that, as yet it has not been established on a firm scientific basis, that nothing can be predicted from it, and that comparative experiments on animals, if carefully made, may, in the future warrant frequent resort to the method in the human female.